

SOME ASPECTS OF THE GEOGRAPHY OF LIVESTOCK  
MOVEMENT IN SCOTLAND

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## ABSTRACT OF THESIS

The main purpose of this study is to identify, describe and explain the movement of store sheep and store cattle between farms in Scotland. Emphasis is placed on present-day movements, but the explanation of these inevitably involves an examination of their antecedents. The largest part of the study is devoted to an analysis of the movements of store sheep, both because the movements of sheep are more complicated than those for cattle and more information was available on them. The approach taken for both types of stores is to determine the main lines or patterns of movement and then to explain them. In each case, too, the distribution of breeds is examined, then the movement of stores for breeding and finally the movement of stores for feeding.

Data obtained from livestock auction markets were the main source used for identifying the movements and personal interviews and agricultural publications provided most of the information for explaining them.

Objectives of a more directly practical nature were pursued in addition to the main purpose, including an evaluation of the suitability of direct farm-to-farm transfers as compared with those via markets and the estimation of inter-regional movements according to regions used by the Department of Agriculture and Fisheries for Scotland.

Summaries of the main features of movement are given at the end of most chapters and in the conclusion aspects of the movement which could be usefully investigated in more detail are suggested.



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## INTRODUCTION

Until the early 1960s, the writer of this study had little interest in the geography of livestock movement. This was an outcome both of the relative unimportance of livestock in his home area of Manitoba and the fact that he had not travelled outside it, even within Canada. His experience was therefore limited to the crop-dominated agriculture associated with the prairies. At the post-graduate level, however, interest in livestock was aroused by T.R. Weir, who had written a study entitled Ranching in the Southern Interior Plateau of British Columbia.<sup>1</sup> Dr. Weir frequently referred to this study during the course of lectures and it was through these references that the writer first became aware of livestock movement as a field of research within agricultural geography. This interest was not fully developed until 1966. At that time the writer enrolled for doctoral studies at the University of Edinburgh largely because J.T. Coppock, Ogilvie Professor of Geography at Edinburgh, had mentioned in several publications that there was a need for geographical studies of livestock movement in Great Britain.<sup>2</sup> In view of this mutual interest, it is not surprising that the writer should undertake a study of livestock movement in Scotland under the supervision of Professor Coppock. The way in which it was approached and its general theme will now be examined.

The main purpose of this study is to identify, describe and explain the most important lines or patterns of inter-farm movement of store<sup>3</sup> sheep and store cattle in Scotland.<sup>4</sup> In addition, there are subsidiary objectives of a more practical nature. For example, certain aspects of the movement were examined in more detail than might otherwise have been the case because they were known to be of interest to veterinary authorities. Similarly, statistical data on movement were tabulated in such a way that they would be used without alteration by the Department of Agriculture and Fisheries for Scotland (abbreviated D.A.F.S., see p. 447).

Ratios of livestock calculated from the June and December agricultural census returns were useful for identifying some of the main types of store movement, but many important types could not be identified in this way and, moreover, no information was provided concerning the lines of movement. It was decided, therefore, to try other approaches, the best of which proved to be the use of sales records kept by auction markets. In this respect, the writer was fortunate in that the vast majority of store sheep and cattle moved between farms in Scotland are sold at auction markets and most markets allowed access to their sales records.<sup>5</sup>

These sources were used to identify the main types and lines of movement and the next task was to explain them. This involved both reading a wide range of agricultural publications and gathering data by personal interview and correspondence. When this study was begun in 1966,

there were no printed works dealing specifically with the geography of livestock movement in Scotland,<sup>6</sup> but frequent allusions to it were found in agricultural publications. Information derived from this source explained only the broad outlines of store-stock movement and therefore interviews and correspondence were relied upon to explain the more detailed aspects. Interviews were conducted throughout Scotland and north England with auctioneers, agricultural advisers and, to a lesser extent, veterinary officers, farmers and livestock hauliers. Many of these interviews were followed-up by correspondence, and several postal surveys were conducted on aspects of the movement not well documented by the auction markets.

A final noteworthy point concerns the scale of analysis. In reality, the entire range of store-stock movements exist as an integrated whole, but it was not possible to examine this whole and at the same time give a lucid account of its component parts. Conversely, if the parts were examined separately, the whole, which is more than simply a sum of the parts, would receive inadequate attention. A combination of these two approaches was therefore adopted. The general aspects of each main type of movement were considered first and then the more detailed aspects were examined upon this backcloth. This approach inevitably involved some repetition, but where it does occur an attempt was made to view the same general points from different aspects.



## CHAPTER I

## GENERAL FACTORS INFLUENCING THE MOVEMENT OF STORE SHEEP:

## A. DISTRIBUTION AND TYPES OF FLOCKS

## B. METHODS OF TRANSFER

Introduction

There are two main categories of farm-to-farm movement of store sheep viz. movements for breeding and for feeding. Each of these will be examined subsequently in separate chapters, and as will be shown there the patterns of distribution and lines of movement differ considerably each from the other. Moreover, within each group the movements are many and complex; indeed, so much so that at first sight there appear to be no factors governing the movements within each group, let alone giving rise to the similarities and differences between groups.

However, further investigation has shown that there are a limited number of factors which explain, if not all, at least most of the movements. These factors are of two main types, general and particular. The general factors explain the broad outlines of each type of movement whilst the particular factors explain its detailed aspects.

Furthermore, it was apparent that amongst the general factors there were some which, if fully understood, explained the broad outlines of both the movements of sheep for breeding and for feeding. Therefore it was felt a separate analysis of these general factors should be made and that it should precede the more detailed discussion of each type of movement. It is then, these general factors which will be examined in this chapter.

The most important factors determining the patterns of movement

of both sheep for breeding and sheep for feeding can be grouped as follows:

- (1) The distribution and management of breeding flocks and their relationships with other farm enterprises.
- (2) The methods by which movement takes place.

The first group will be examined first, beginning with an analysis of the development and distribution of the most important breeds found in Scotland today.

#### A. DISTRIBUTION AND TYPES OF FLOCKS

##### Introduction

This analysis of breed distributions and types of management of breeding flocks in Scotland will begin with an examination of the antecedents to the present day. This approach has been taken because it is only by understanding how the present-day patterns have developed that they can be explained in a satisfactory manner. Moreover, by placing the present-day patterns of flock distribution and lines of movement arising from them in an historical context, they are seen, as in reality they are, as but one part of an ever-continuing process of change. Furthermore, an understanding of the processes of change which have operated in the past and are operating now provided a basis on which to form judgements of what is likely to occur in the future.

## Development of Present Day Breeds

To 1700<sup>1</sup>

Although there is little information available concerning the breeds of sheep in Scotland before 1700, it is apparent that by the 11th century breeds resembling the present day Soay were common in all parts of the country where sheep were kept. It is also known that between the 11th and 18th centuries some regional variations took place. This was especially true of the Border areas where English breeds of sheep, including the English Shortwool and Blackface, replaced or were crossed-in with the local breeds. Elsewhere in Scotland, too, regional types, such as the Kerrie in Caithness, were developed, but they resembled the original Soay types much more than the breeds developed in the Borders.

Throughout the Middle Ages and until the beginning to middle of the 18th century sheep in Scotland were maintained mainly to provide wool and milk for domestic use. The general practice during the summer was to keep the sheep near the township settlements so they could be milked and so they could be housed overnight as a protection against wolves and foxes. During the winter the sheep were housed day and night because it was felt that the climate was too harsh to allow outdoor wintering.

1700 - Present

The predominantly subsistence agriculture characterized by "fermtouns" or townships with run-rig on the arable and rough grazings beyond the head dyke prevailing in Scotland until about 1700 was gradually replaced by a more commercial agriculture based on individual holdings and enclosed fields between 1700 and 1850. This "revolution" in agriculture began in south Scotland following the Union of Crowns

in 1603 but did not gain real impetus until after the Union of Parliaments in 1707. Once begun, however, the adoption of new methods was swift so that by about 1800 it could be said that the agricultural revolution was very largely an accomplished fact in the south. However, progress in the Highlands and Islands was much slower and it was not until the improvement and extension of transport after the Battle of Culloden Moor in 1746 that the new methods penetrated beyond the Highland line. Even after this, isolation and resistance to change delayed the adoption of new techniques; but by about 1850 they had become common in most parts of Scotland.

It was during this one hundred and fifty years of rapid change in agricultural methods that the present-day stratified or integrated form of sheep breeding in Scotland was begun. This system is characterized by different breeds or crosses for the hills, uplands and lowlands and is called an integrated or stratified system because the replacements for flocks maintained on each successive range of altitude are generally brought-in from the flocks on the next higher range of altitude until the self-replacing hill flocks are reached. This system arose because of the increasing contrast between the hills on the one hand and the uplands and lowlands on the other. Improvements in the form of enclosure, drainage, liming and fertilising, together with new crops and rotations, were introduced first to the lowlands and, subsequently, were extended into the upland areas. However, above a certain altitude, varying from place to place, the economic benefits were outweighed by the costs of improvement so that the land was left as it had been, that is, as rough grazing land. As these different patterns of land use were being established farmers were experimenting with different breeds and crosses of sheep to suit the type or types

of land on their farms and, from the vertical zonation of these types of land use, the integrated system of sheep breeding arose.

#### Hill Breeds

The foundation stocks on which the stratified or integrated system developed were the Blackface and Cheviot breeds. Prior to 1700 similar types to these breeds had been maintained and moved during the summer to grazings on the Southern Uplands but it was not until the agricultural revolution that they were developed as true hill breeds, that is, breeds capable of spending the entire year on the hills.

The Cheviot or, as it was at first known, the Teviot, breed was developed on the grassy hills of the eastern Southern Uplands from the Dunface, a cross between the native Soay type and the English Shortwool, through careful selection and crossing with the Culley Leicester<sup>2</sup>. The Scotch Blackface, or as it was variously known, the Linton, Tweeddale or Forest breed, was developed on the heathery hills in Ettrick and Tweeddale in the central and western Southern Uplands from a similar type which had been previously introduced there from the Pennines of northern England<sup>3</sup>.

Expanding markets for mutton and wool characterise this early period of agricultural improvement and it was for these properties that the Cheviot and Blackface sheep were selected and bred. That these properties were successfully developed is evident from the fact that fleece weights increased from 1½ to 4 pounds and carcase weights from 20 to 25 pounds to 60 to 80 pounds<sup>4</sup>.

The success of the Cheviot and Blackface breeds in the Southern Uplands did not pass unnoticed beyond the Highland line. As the re-organisation of agriculture spread northwards, vast areas of hill grazing

held by Highland chiefs and lairds were let or sold to store masters from south Scotland who moved to the Highlands with their shepherds and flocks<sup>5</sup>. The Blackface breed was the first of the new breeds beyond the Highland line and by 1800 they had replaced most of the native breeds as far north as Ross and Cromarty<sup>6</sup>. The Cheviots' expansion into the Highlands was somewhat later, beginning with their introduction to Caithness by Sir John Sinclair in 1792 and continuing until 1825 by which time they were the predominant breed in the mainland hill areas north of Inverness<sup>7</sup>.

It had been recognized in the Southern Uplands that the Cheviots were best suited to the better, i.e. drier and grassier hills and the Blackfaces to the poorer, i.e. wetter and more heathery hills and, broadly speaking, it was to these types of hills that each breed was taken at first north of the Highland line<sup>8</sup>. This relationship held true throughout the 18th and early part of the 19th century. By 1825 the Blackface breed was the predominant, and in some areas the only, breed on the heathery hill grazings of the western Southern Uplands and central Highlands and on the wetter and generally poorer hill grazings of the western Highlands whilst the Cheviots predominated on the drier and/or grassier hills of the eastern Southern Uplands and the north Highlands.

Between 1825 and 1860, however, there was an extension of the Cheviot breed into areas previously considered more suitable to the Blackface breed. This occurred because the price of Cheviot wool during the period exceeded that of Blackface wool to a much greater extent than it had in former years. This relative advantage in favour of Cheviot wool made it profitable for farmers in some areas to switch over from Blackfaces to Cheviots even though death rates were higher



and the returns from mutton production were lower for the Cheviots. By 1860 Cheviots had become the predominant breed in the former Blackface stronghold of Tweeddale and they were also of considerable importance in Dumfries, Lanark and Kirkcudbright<sup>9</sup>. In the central Highlands, too, the area of Cheviot hill sheep had been extended and they had been introduced to the Western Isles of Skye, Lewis and Harris as well as to the southern Highlands in Kintyre, Mull and Tiree<sup>10</sup>.

Shortly after 1860, however, the premium for Cheviot wool, and wool prices in general, fell owing to competition from imported Australian Merino wool with the result that many hill farmers found that they would be better off to replace their Cheviot flocks by Blackfaces<sup>11</sup>. This initial readvance of the Blackface breed was reinforced and prolonged by the decline of the wether system (glossary, p. 445) on hill grazings in Scotland. From about 1750 until 1850 wether sheep had been the main source of income, as far as mutton was concerned, on hill sheep farms in Scotland. But, after 1850, competition from Australian and New Zealand lamb in the United Kingdom market and a change in consumer demand towards leaner meat made it desirable for Scottish flockmasters to market their wethers at progressively younger ages until, by 1900, most of the production was in the form of lambs<sup>12</sup>. The change from wethers to lambs led to the disappearance of about three quarters of a million sheep from the harsher and usually higher hill grazings of the Highlands<sup>13</sup>. This occurred because these grazings could not support ewe stocks on a profitable basis and hence, once the wethers were removed, the land was put to alternative uses, in particular as deer forests, which increased

from 1.9 to 3.6 million acres between 1883 and 1912<sup>14</sup>. On the less harsh hill grazings, however, it was possible to replace the wether by ewe stocks. Generally speaking, Blackface ewes replaced Blackface wethers. Moreover, in many areas, Blackface ewes replaced Cheviot wethers because Cheviot ewes were not hardy enough for some of the hills on which Cheviot wethers had been maintained<sup>15</sup>. Another factor in favour of the Blackface breed was that they matured more quickly than the Cheviots and were therefore in greater demand as fat lambs for the growing urban markets in the central Lowlands of Scotland and north England<sup>16</sup>. In addition, several severe winters in the 1880s showed that the Blackface was more suitable to some hill areas where previously, in times of milder winters, the Cheviot had appeared to be the most profitable breed<sup>17</sup>.

A combination of all these factors - dropping wool prices, the change from wethers to ewe stocks, differences in the rates of maturity of lambs and the ability to withstand severe winters - brought about a change in the Blackface to Cheviot hill sheep ratio from about 1:1 in 1860<sup>18</sup> to 4:1<sup>19</sup> in favour of the Blackface breed by 1913. This ratio appears to have been more or less constant until 1945, but since the Cheviots have been further reduced (Table 3). This recent decline began during the Second World War when the Ministry of Food took control over fat stock prices. The Ministry paid on a weight and grade basis alone which was a disadvantage to the Cheviot breeder because under the free market system Cheviot lambs had received a higher price per pound than Blackface lambs<sup>20</sup>. The removal of this premium until the return of free marketing in 1954 led some farmers to change from Cheviot to Blackface stocks because, under equal price per pound,



it was often found that the Blackface breed was more profitable to maintain. Moreover, during the period of controlled prices, hill farmers discovered that a large proportion of their Blackface lambs could be graded fat directly off the hills, thereby assuring them of a guaranteed fatstock price rather than an uncertain and rapidly fluctuating price which would be obtained if the lambs were marketed in the store auction markets<sup>21</sup>. On the other hand, because of a slower maturity rate, few Cheviot lambs could be graded directly off the hills in this way and, because of this, some farmers replaced their Cheviots by Blackfaces. This factor has been the most important one since decontrol in 1954 because, although the premium for Cheviot lambs has been restored, the guaranteed fat price has been continued in the form of the Fatstock Guarantee Scheme, and the benefits of the latter in favour of the Blackface breed often outweigh the benefits of the former in favour of the Cheviot.

#### Upland and Lowland Breeds

It has been mentioned previously (p. 7) that the stratified system which today characterizes Scottish sheep farming was developed in its main outlines by 1850 and that, in this system, the upland and lowland flock replacements are derived ultimately from the self-replacing hill flocks of Blackfaces and Cheviots. This system was not generally adopted at the beginning of the agricultural revolution, but rather was developed by trial and error during the period from about 1750 to 1850.

In the period from 1750 to 1800 Cheviots and Blackfaces were the most important of the newly developed breeds on the uplands as well as

on the hills. This arose because it was the lowlands rather than the uplands which were enclosed and improved in this period and hence a large proportion of the uplands were still in rough grazings suited to the hardy Blackface and Cheviot breeds. On the lowlands, however, Border Leicester flocks, developed for arable conditions in Scotland from the Culley or English Leicester, were maintained in many places, particularly in South-East Scotland<sup>22</sup>. In themselves, these breeds, the Blackface and Cheviot hill breeds on the one hand and the Border Leicester arable breed on the other, did not constitute an integrated system, but they did form the basis for its development in the period 1800 to 1850.

As with the development of breeds suitable for the hills and lowland areas of Scotland, the crossing of these to produce new breeds in an integrated system was begun in south Scotland. At first the system involved one stage only, the crossing of cast Cheviot or Blackface ewes with the Border Leicester rams to produce Half-Bred (Cheviot X Leicester) and Greyface (Blackface X Leicester) lambs. This system of first crosses from hill ewes rapidly became the most common form of sheep enterprise on the lowland farms and on the more improved upland farms in south Scotland. Then, as time went on, regular cross-bred flocks in which replacements were bought as ewe lambs, ewe hoggs or gimmers became as popular as flying flocks in which cast hill ewes were used as replacements.

This system of cross-breeding was well established on the uplands and lowlands of south Scotland by 1850<sup>23</sup>, but it was soon modified or altered by the addition of another crossing stage so that by 1900 there were separate and distinct crosses for hill, upland and lowland farms.

This second stage of cross-breeding, involving the mating of Half-Bred ewes with Border Leicester or Half-Bred rams became common on the better arable farms of eastern Scotland because the lambs produced were heavier, quicker maturing and gave a better return than the Half-Bred lambs resulting from the first stage of cross-breeding<sup>24</sup>. In a similar manner and for similar reasons Greyface ewes crossed with Border Leicester rams became popular on lowland farms in South-West Scotland, but they were never as common as crosses based on the Half-Bred ewe in the eastern lowlands.

The second stage of cross-breeding, either from Half-Bred or Greyface ewes, displaced the first stage of cross-breeding on the better lowland farms in southern Scotland by the end of the 19th century. Hence, in this area, sheep farming was characterised by a three-tier system consisting of Blackface and Cheviot pure-bred flocks on the hills, Blackface and Cheviot cross-bred flocks producing Half-Bred and Greyface lambs on the uplands and Half-Bred and Greyface cross-bred flocks producing second cross lambs on the best lowland farms. This same general system is found in southern Scotland today but now the second cross on lowland farms is achieved by mating Half-Bred or Greyface ewes with Suffolk or Oxford Down rams to produce Down-Cross lambs. This change from Border Leicester or Half-Bred rams to Down rams occurred early in the 20th century because the lambs produced from the Leicester or Half-Bred rams were too heavy and fat for consumer demand<sup>25</sup> which has shown a progressive tendency to favour lighter and leaner fat sheep during the past one hundred to one hundred and fifty years. This trend led to the eventual unpopularity of the original second-cross lambs, as it led to the decline of the wether system in the 19th century.

This discussion has been concerned only with the development of the

integrated system in south Scotland. This area was treated first because it was there that the present-day Scottish pattern of breeding was first developed. The extension of this system to north Scotland has taken place in this century and it is this which will now be considered.

The delay in the adoption of the integrated system north of the Clyde-Forth line occurred for several reasons. One is that as long as the wether system lasted, or until about 1900, farmers on the foothills of the eastern Grampians believed that ewes could not be maintained on the hills of that area and hence kept wethers, bought as lambs or hogs, instead<sup>26</sup>. But when the wether system went out of favour they were forced to seek alternatives and soon found that ewes, in particular Blackface ewes crossed to produce Greyface lambs, were a profitable upland sheep enterprise<sup>27</sup>. This system of cross-breeding also spread north to the uplands of Aberdeen but the delay there was caused by somewhat different reasons. In Aberdeenshire the emphasis, since the beginning of the agricultural improvements, had been on cattle rather than sheep. Indeed, between 1690 and 1810 the number of sheep had dropped from 600,000 to 100,000, largely as a result of the emphasis on the cattle industry<sup>28</sup>. Cattle have continued to be the sine qua non of Aberdeenshire farming up to the present day, but early in the 20th century wild white clover was introduced to farms there and such was the increase of stocking densities which resulted, that sheep numbers were increased several fold and, at the same time, cattle numbers were also considerably enlarged<sup>29</sup>. It was natural that farmers in Aberdeenshire, when stocking the improved pastures with sheep, should follow what had proved to be successful in southern Scotland. Thus, Blackface ewe flocks producing Greyface lambs and Greyface or Half-Bred

ewes producing Down-Cross lambs were introduced to the uplands and lowlands of North-East Scotland at about the same time that this system was taking its final form in south Scotland.<sup>30</sup> Still further north, on the uplands and lowlands from Inverness to Caithness, cross-bred flocks, usually Cheviots crossed to produce Half-Bred lambs, had become popular even before the integrated system was developed in the areas from Perth to Aberdeen.

### Present Day Distribution

#### Sources of Data

It has been shown that the main outlines of the present day stratified system of sheep breeding have been in existence for 50 years in north Scotland and for over a century in south Scotland. However, it is only in recent years that statistics have been available to assess the relative importance of some of the breeds and to map their areal distributions. Moreover, these statistics are not comprehensive and because of this much of what follows had to be based on interviews with farmers, agricultural advisers and livestock auctioneers throughout Scotland.

The official statistics collected and made available by D.A.F.S. provide information on the numbers by breed of breeding sheep in receipt of the Hill Sheep Subsidy by county for the years 1945 to 1951 and 1961 to 1968. These subsidized hill sheep account for most of the pure-bred breeding sheep maintained throughout the year on the hill grazings of Scotland. By subtracting these hill sheep from the December total figure for breeding sheep, the other breeding sheep, maintained mainly on the uplands and lowlands, and usually cross-bred, were calculated for each

region (Table 1). Further refinement was made possible for one year, 1968, because in this year the Upland Sheep Subsidy was introduced. On the assumption that most of these subsidized upland breeding sheep are cross-bred flocks based on hill ewes, it was possible to obtain a more complete picture of the integrated system. Thus, in Table 2, the subsidized hill sheep approximate the pure-bred hill flocks, the subsidized upland sheep represent cross-bred flocks, most of which are based on the hill breed of ewes, and the remainder represent lowland flocks, most of which usually are based on first cross ewes derived from the upland cross-bred flocks. This information is useful as a general guide to the importance of the various parts of the integrated system in each area but, excepting for the subsidized hill sheep, no information is given as to the breeds of ewes maintained. Moreover, even for the ewes in receipt of hill subsidy, the numbers by breed are normally given by county only. However, it was possible to obtain a parish breakdown by breed for the year 1966 and this has been used as a basis for mapping the distribution of hill flocks later in the study. The number of upland and lowground breeding sheep<sup>32</sup> was also available on a parish basis. Although no breakdown by breed was given for these, maps of the breed distributions were prepared on the basis of numerous interviews and from auctioneers sellers' lists.

#### General Features of Distribution

Scottish sheep farming today can be thought of as consisting of two integrated streams or categories, one based on the Cheviot ewe and the other on the Blackface ewe. Within each stream the hill ewes maintained on rough grazings are bred pure and provide breeding replacements in the form of ewe lambs, ewe hoggs, gimmers or cast ewes for the

upland and some lowland flocks using the same breed of ewe but crossing them to produce Greyface or Half-Bred lambs. These flocks, in turn, provide breeding replacements for farmers on the lowlands who cross Greyface or Half-Bred ewes to produce Down-Cross lambs. Hence, in general, the two streams are as follows:

	Hill	Upland	Lowland
Ewe	Blackface	Blackface	Greyface (Blackface X (Border Leicester)
Ram	Blackface	Border Leicester	Suffolk or Oxford Down
Lamb	Blackface	Greyface	Down-Cross
Ewe	Cheviot	Cheviot	Half-Bred (Cheviot X (Border Leicester)
Ram	Cheviot	Border Leicester	Suffolk or Oxford Down
Lamb	Cheviot	Half-Bred	Down-Cross

There are many caveats to be added to this rather simplified outline, but it is a useful one with which to begin a discussion of the present-day distribution and types of sheep enterprise in Scotland.

It has been shown (p. 8) that from the earliest days of the maintenance of sheep all year on the hill grazings of Scotland, it was recognized that the two hill breeds, Blackface and Cheviot, were suitable for different types of hill environment. These contrasting hill environments are such that it can be said that the hills of the South-East and far north where Cheviots are maintained are generally less hard than the hills of the central-west Highlands and Southern Uplands where Blackfaces are maintained (Maps 1 and 2). This is generally true even though the winter temperatures in areas where Cheviots predominate are often lower than those in areas where Blackface sheep are the most common hill breed. The areas where Blackfaces are kept are considered harsher because the vegetation, comprised in large



part of heather and/or wet grass moors, provides only scanty winter feed and a combination of wind and rain together produce a much harsher environment for sheep than low temperatures<sup>33</sup>. Moreover, the mildness of the winter is in itself a drawback because it provides conditions favourable to the development and spread of sheep diseases, notably the braxy, which are less common in areas of cooler winter temperatures<sup>34</sup>.

The contrasting environments under which pure-bred Blackface and Cheviot hill sheep are maintained is also a feature of the distribution of their first and second crosses. Thus, in general, Blackface ewes in upland flocks and first-cross Blackface ewes (i.e. Greyface ewes) in lowland flocks are maintained under harsher conditions than their Cheviot counterparts. The Cheviot ewe, and its first cross, the Half-Bred, have been developed, and are today generally found, in association with arable and semi-arable farms in the drier eastern parts of the country<sup>35</sup>. Under these conditions the full potential of the Cheviot first- and second-cross lambs, both of which tend to be larger and heavier than their Blackface counterparts, can be developed. On the other hand, the Blackface and Greyface ewes in cross-bred flocks are more suitable for dairying or stock-rearing areas where much of the land is sown to grass or is in rough grazing. Under Scottish conditions this means that the Blackface stream tends to be concentrated on the uplands and lowlands to the west of the Cheviot and its crosses.

#### Organisation of Sheep Farming

Although the distributions described above are generally true, there are many exceptions to them owing to the influence of many factors, including size and type of farm, location with respect to replacements,



and personal inclination of the farmer. Furthermore, within each group, the rather simplified outline of breeds and crosses that has been given is true only in the broad scale. It is the purpose of this section to analyse both these features, breed distribution and types of sheep enterprise, in a much more detailed way, because it is only by thoroughly understanding these features that the movement of sheep can be adequately explained.

#### Pure-Bred Ewes in Hill and Upland Flocks

In recent years hill sheep subsidy has been paid on about  $2\frac{1}{2}$  million or two thirds of the female breeding sheep in Scotland. Of these subsidized sheep, about three quarters are of the Blackface breed, one sixth are Cheviots and the remainder are Zetlands or Zetland crosses (Table 3).

The  $2\frac{1}{2}$  million sheep on which hill subsidy is paid are not, as might be expected, representative of the pure-bred hill flocks which form the basis for the integrated system of sheep flocks in Scotland. Rather, the  $2\frac{1}{2}$  million includes an unknown but considerable number of ewes which are maintained on hill grazings for a period sufficient to qualify for the hill sheep subsidy but are, in fact, crossed to produce Greyface, Half-Bred or Zetland-Cross lambs. It can be said, however, that most of the  $2\frac{1}{2}$  million are in pure bred flocks and that pure breeding is most common on the hill sheep farms and crofts whereas both pure and cross breeding are important on upland rearing farms (Tables 2 and 4).

The 1.3 million breeding ewes and gimmers on hill sheep farms (Table 4) are almost all in pure-bred flocks which are maintained throughout the year on rough grazings. Moreover, by definition, at

least 90 per cent of the land area of individual hill sheep farms is in rough grazing<sup>36</sup>, and they occupy about half the total area of rough grazings in Scotland<sup>37</sup>. Because stocking rates are relatively low, ranging from about 1 ewe per acre in the Southern Uplands to 5 to 10 acres per ewe in the Highlands<sup>38</sup> and because most of the income is derived from sheep, the flocks and hence the farm acreages are larger on hill sheep farms than on other farm types in Scotland (Table 4).

Another feature of flocks on hill sheep farms is that lambing rates on them are generally lower than on other types of farms (Table 5). This difference arises because of the association of hill sheep grazings with high altitudes, high precipitation, low temperatures and lack of supplementary feed in the form of arable crops, all of which directly or indirectly contribute to high ewe and lamb losses during the winter months.

Flocks on hill sheep farms are thus usually pure-bred. The most common practice throughout Scotland is for the breeding ewes to be kept in regular ages from gimmers (1½ years of age) through to 4 crop ewes (6½ years of age). Replacements for the breeding flock are selected from the ewe lambs and kept eild (glossary, page 445) until they enter the breeding flock as gimmers. Then, after bearing 4 or 5 crops of lambs they are removed from the hill grazings and sold for further breeding or feeding under upland or lowground conditions. In addition, most of the wether lambs and the ewe lambs surplus to breeding requirements are sold for feeding on other farms.

Most of the breeding sheep maintained on crofts are kept on rough grazings and are pure-bred. That is, they are maintained under similar hill conditions to those on hill sheep farms but are managed in a different way. It is more difficult to estimate the number of

pure-bred hill ewes on the crofts than on other types of farms, however, because the present farm classification includes crofts with spare and part-time holdings. These are given for 1968 in Table 4 but the map of farm types (Map 4) refers only to full time holdings and hence excludes most of the crofts. It can be said, however, that most of the ewes on part and spare-time holdings in the Highland Region are in crofters' flocks on rough grazings and that these account for most of the pure-bred hill flocks kept on crofts in Scotland.

Within the general crofting area shown on Map 5 most of the crofts are located near sea level, with the arable or croft land extending from the settlements to the sea and the rough grazings extending inland and upslope in the opposite direction. Sizes of hill flock are, on the average, much smaller than those on hill sheep or upland farms because the crofters depend upon non-farming activities such as fishing and the tweed industry for a large part of their income; indeed, on many crofts, hill sheep farming is really only a sideline rather than a major source of income.

The management of hill flocks on crofts varies considerably depending on the size of flock and the way in which they are grazed. If flocks are small, which is usually an indication of other, more important sources of income, and they are grazed on the crofter's own hill grazings, they are usually not well managed. On crofts of this type it is common for ewe and lamb death rates to be quite high and, mainly for this reason the ewes are kept for several years longer than on hill sheep farms. Also, because of high lamb losses, the crofter is often forced to keep as flock replacements all the ewe lambs, many of which would be sold for feeding from hill farms. Thus over a period of time the quality of the breeding flock declines and the losses of

ewes and lambs due to the ravages of climate and disease further increase. On the other hand, if individual flocks are larger or if a group of crofters operate their flocks and grazings in common, management resembles that of the hill sheep farm. Moreover, the larger scale of operations and more skilful shepherding usually means that deaths are less and the general quality of the ewes is better than the smaller, individually-managed flocks.

It would appear that the 0.9 million breeding ewes on upland farms are mainly on hill grazings because, taken together with the 1.3 million on hill sheep farms and the 0.4 million on spare and part time holdings, the total of 2.6 million closely approximates the number of sheep qualifying for hill subsidy in 1968 (Tables 2 and 4). However, a large but unknown proportion of the 0.9 million ewes on upland farm areas, unlike those on hill sheep farms and crofts, is cross- rather than pure-bred. If the flocks are entirely pure-bred they are managed in much the same way as flocks on hill sheep farms. However, flock sizes tend to be smaller because other enterprises, in particular cattle breeding and rearing, contribute an important part of the farm income. In addition, many of the upland farms, particularly in the north-east Scotland, are small family farms akin to the crofts of the Highland region.

#### Breed Distribution of Pure-Bred Hill Flocks (Maps 6 and 7)

Blackface:- Pure-bred flocks of the Blackface breed account for about three quarters of the subsidized hill sheep and perhaps a slightly higher proportion of the pure-bred hill sheep in Scotland. Their popularity arises because they are the most suitable Scottish breed for withstanding the harsh winter conditions - wind, rain, sparse

grazings - which characterize most Scottish hills. They are found on hill sheep and upland farms as well as crofts throughout the hill areas of Scotland, excepting for the far north. Moreover, they are the only hill breed in the extensive hill area from Inverness south through to Kircudbright and, as discussed on page 12 have recently been displacing Cheviots from their original stronghold in the eastern Borders (Maps 1, 6 and Table 3).

Cheviot:- Although the number of pure-bred Cheviot flocks has been declining in recent years, they still form about one sixth of the Scottish total (Table 3). The Cheviot is the only hill breed on the mainland from mid-Ross and Cromarty through to Caithness and is also important on the west coast of Inverness and Ross-shire and on the Isle of Skye (Maps 1 and 7). In south Scotland Cheviot flocks are confined to the eastern parts of the Southern Uplands. This distribution reflects the fact that winter conditions on these hills are kindlier, i.e. drier with better grazings and less risk of disease, than on other hills in Scotland and that Cheviots are generally more profitable than Blackfaces under such conditions.

It should be noted that there are two main types of Cheviot sheep, the North Country and the South Country types. The North Country type was developed from the South Country after the introduction of the latter, then simply known as the Cheviot, to the hill grazings of the far north. From Ross-shire northwards, but not in west Inverness and Skye, it was found desirable to breed a larger, stronger and longer-legged type of Cheviot which would be better able to negotiate the boggy "flow" land characteristic of many hill grazings in the area<sup>39</sup>. This was achieved by the adoption of different management practices, including reduction of stocking rates, away-wintering of ewe hogs and

leaving gimmers eild, all of which are now regular features of Cheviot flock management in the North of Scotland. In addition, several severe winters in the 1870s and 1880s led Border flockmasters to breed and select for a smaller, blockier Cheviot<sup>40</sup> and this, too increased the divergence between the two types. By about 1900 the two distinct types had been developed and given recognition by the names used today<sup>41</sup>. Then, from about 1910 to 1920, farmers with Cheviot flocks in the eastern Borders suffered heavy losses from the sheep disease scrapie. Believing this to be caused by in-breeding, Border farmers began buying fresh stock from north Scotland. Some of these bought-in North Country Cheviots replaced, or were crossed-in with, hill flocks of South Country Cheviots, but after the disease subsided the South Country Cheviots once again became predominant. However, a large number of North Country Cheviot sheep were kept, not on the hills, but on the in-bye arable fields of upland farms<sup>42</sup> where they replaced crossing flocks of South Country Cheviots kept to produce Half-Bred lambs. These upland flocks of North Country Cheviots are found in the Borders today and some of them are pure-bred but because they are not maintained on rough grazings, they do not receive the hill subsidy.

In summary then, pure-bred North Country Cheviots are maintained on the hills of the far north in Ross and Cromarty, Sutherland and Caithness and on some upland farms in the south-eastern Borders. South Country Cheviot pure-bred flocks are kept on the hills of the central and eastern Southern Uplands, along the west coast of Inverness and Ross and on Skye.

Zetlands:- Zetland and Zetland type ewes are the least important numerically and areally of the pure-bred hill flocks in Scotland. Almost all of them are found on Zetland and are kept on croft grazings in small individually managed flocks.



### Ewes in Upland Cross-Bred Flocks

An indication of the importance of upland cross-bred flocks in recent years can be gained from the subsidy statistics for 1968/69. For this year, the only one to date for which data of this type were collected, there were 0.54 million claims for the upland sheep subsidy (Table 2 and Map 9). Almost all of these ewes, and, in addition, an estimated 0.4 to 0.5 million of the ewes qualifying for the hill sheep subsidy, are in upland flocks. In other words, about 1 million of the 3.8 million breeding sheep in Scotland in 1968 were in upland crossing flocks, 2 million were in pure-bred hill flocks and 0.8 million were maintained in lowland crossing flocks.

The one million or so ewes in upland cross-bred flocks do not all produce cross lambs, however, because it is quite common for a proportion of the younger ewes or gimmers to be pure-bred to provide some or all of the required flock replacements. Thus, to take a hypothetical example, a farmer with 100 Cheviot ewes on an upland farm may cross 75 of them with a Border Leicester ram to produce Half-Bred lambs but breed the remaining 25 pure to provide, say, 15 Cheviot ewe lambs for replacements. In this way, assuming an annual replacement rate of 25 per cent, he would only need to buy in 10 replacements to supplement those that were home-bred. However, a large proportion of the upland flocks is, in fact, entirely cross-bred, but it should be borne in mind that some pure-bred lambs as well as cross lambs are produced in these upland flocks.

Whether entirely crossed or partly crossed and partly pure-bred, the ewes in upland cross-bred flocks are mainly of the Blackface and Cheviot breeds. Although precise statistics are not available, it would appear that the Cheviot breed is of relatively greater importance

in upland crossing flocks than it was in hill flocks. One of the main reasons for this is that there is a high demand for Half-Bred ewe lambs for replacements on lowground farms and, more so in the past than now, this has made the production of Half-Bred lambs more profitable than Greyface lambs<sup>43</sup>. Another important contributing factor is that, owing to lower lambing rates in Blackface than Cheviot hill flocks, there are fewer surplus breeding replacements of the former to sell to farmers with crossing flocks.

It was mentioned on page 19 that Blackface cross-bred flocks were usually maintained on somewhat harsher uplands than Cheviot cross-bred flocks. This is to be expected because a similar relationship exists for pure-bred flocks of these breeds on the hills and, although conditions are generally better on the uplands, the upland environment still exhibits variations which favour the inherent characteristics of foraging and mothering ability of one or the other of the two breeds of ewes. However, other factors are also important in the distribution of upland ewes. The main one is the availability of replacements. The importance of this factor is not so apparent now but 50 to 100 years ago when the upland cross-bred flocks were being developed it was natural for farmers on the uplands to use the nearest available hill breed. For example, farmers on the uplands in the western part of south Scotland obtained Blackface replacements from adjacent hill areas whilst farmers on the uplands further east were supplied by local Cheviot hill flocks. That said, it is difficult to separate the influence of environment from availability of replacements in the distribution of upland flocks because, generally speaking, the upland environments favourable to each breed tend to be located adjacent to areas where hill sheep of the same breed are maintained. In other



words, Cheviot upland flocks are found on the drier more arable uplands in south-east and north-east Scotland adjacent to areas of hill Cheviots, and Blackface upland flocks are found on the wetter less arable and generally harsher uplands adjacent to areas of Blackface hill flocks.

#### Organisation and Management

An important feature of the management of upland cross-bred flocks is that the ewes are usually removed from the rough grazings for several of the winter months during which time they are fed on hay, grass and root crops on the in-bye arable parts of the farm. This better winter feeding, in conjunction with the softer climate of the uplands and the effects of cross breeding, gives rise to much higher lambing rates in upland crossing flocks than in pure-bred hill flocks. Thus, whereas the pure-bred hill flocks usually produce from 75 to 100 lambs per 100 ewes the upland cross-bred flocks usually produce from 110 to 140 per 100 ewes (Table 4). Another feature in the importance of flying as well as regular flocks on uplands. Moreover, each type tends to be associated with certain types of farms and to be found in particular areas.

Regular flocks are most commonly kept on the larger upland farms which combine extensive areas of rough grazings with a considerable acreage of arable land. The large area of these farms allows the farmer to maintain flocks of a sufficient size to make regular age groups of gimmers to three or four crop ewes an economic enterprise. On the other hand, flying flocks of cast hill ewes are most common on the smaller upland farms or where, for other reasons, flock sizes are small. Flying flocks are more suitable under these circumstances

because they provide the farmer with one or two age groups of a manageable size. If more groups were kept, the special management and feeding required for each group would not be justified by the returns.

Regular cross-bred flocks are most commonly associated with upland stock rearing or stock rearing and feeding farms where the sheep and cattle stocks are moved seasonally from the hill grazings to the in-bye arable fields. During the summer there is sufficient growth of hill grazings to support both the cattle and sheep. But during the winter the beef cattle are usually moved to the in-bye or housed whilst the sheep are maintained on the better parts of the hill or on permanent or rotation grass on the in-bye.

Flying flocks are also found on upland stock rearing farms but they are usually associated with a particular type, one on which cattle but not sheep stocks are transferred seasonally from hill to in-bye. On these farms a pure-bred flock of hill sheep is kept on the hill grazings throughout the year. The cast ewes from this hill flock are used annually to replenish the upland cross-bred flock which is kept on the in-bye grass fields. Flying flocks are also common on small upland stock farms which have little or no hill grazing, although flying rather than regular flocks are preferred on these small farms because of ease of management and, presumably, higher returns per breeding ewe. Besides stock rearing farms, flying flocks on the uplands are most commonly found in association with upland dairy farms. Winter sheep enterprises, in this instance the maintenance of flying flocks, are particularly suitable to dairy farms because they make use of the grass fields while the dairy cows are housed. Moreover, under this system it is easier to give the dairy herd priority of use of the farm during the summer.

### Breed and Type of Upland Flock

Cheviot:- Almost all of the Cheviot ewes in upland flocks producing Half-Bred lambs are in regular rather than flying flocks. This is so because upland farms in Caithness, the south-eastern Borders and Dumfries, where the bulk of the cross-bred flocks are kept, are large enough to maintain regular ages (Map 7). Furthermore, the Cheviot cast ewes benefit more from the move from hills to lowground farms and, as will be more fully discussed later, it is more common for them to be used there than in upland flying flocks.

Another important feature of Cheviot cross-bred flocks on the uplands is that most of them are North Country Cheviots. These rather than South Country Cheviots are favoured mainly because the North Country Cheviot gives a larger and more suitable Half-Bred ewe lamb for sale to lowground farmers with crossing flocks producing Down-Cross lambs<sup>44</sup>.

Some of the upland Cheviot flocks are entirely cross-bred but the most common practice is to breed the gimmers pure. In this way some or all of the replacements required are produced at home. This is particularly important to farmers in south Scotland because their bought-in replacements have to be brought from the far north since the hill Cheviots in the south are South Country rather than North Country types.

Cheviot upland cross-bred flocks are found in three main areas, Caithness, the south-eastern Borders and in Dumfries (Map 7). In all these areas, particularly the first two, they are associated with upland stock rearing and feeding farms (compare Maps 4 and 7). Although management practices vary considerably, it can be said that most of the flocks are maintained for the summer on rough hill grazings and spend

the winter on in-bye grass fields where they are fed hay and turnips. The sheep enterprise on these farms is considered an important, if not the most important, aspect of the farm and, accordingly, the cattle stocks are managed to suit the sheep rather than the reverse, which is the most common relationship in other areas.

Blackface:- Both regular and flying flocks of Blackface ewes are important in the production of Greyface lambs on the uplands. Along the eastern Grampians and on the Ochils, Sidlaws and Campsies, upland farms on which regular flocks are found usually combine an upland crossing flock with the main enterprise of beef cattle breeding and rearing (compare Maps 4 and 6). These farms usually consist of hill grazings and improved in-bye land, much of which is above 500 feet (Map 10). This combination of land types and land use lends itself to the maintenance of permanent or regular rather than flying flocks of sheep. The sheep and cattle are complementary in their grazing habits so that the hill grazings are more effectively used during the summer. Also, they make better use of winter feed because the sheep can be maintained outside on the better hill grazings or poorer in-bye grass whilst the cattle can be maintained on the best grass outdoors or fed inside. Regular crossing flocks are also maintained on farms of the same general type in the Lammermoors, but in the Galloway valleys this type of farm usually combines sheep with dairy cattle. However, farms combining dairy cattle with regular cross-bred flocks are not common, since most farmers who have sufficient hill grazing to maintain permanent sheep stocks keep pure-bred hill flocks and farmers with limited hill grazing, but more in-bye, keep milk-producing dairy herds which favours the maintenance of flying flocks (page 29). Hence, as shown on Map 6, flying flocks are much more important as

producers of Greyface lamb on the uplands of south-west Scotland than are regular flocks. Flying flocks are also important on the smaller stock rearing farms along the eastern Grampians. These farms often lack hill grazings but have long-term rotation grass on the arable suitable for the summer maintenance of small flying flocks. Flying flocks are also found on larger upland farms of this area which devote the hill grazings to pure-bred Blackface hill flocks but maintain the cast ewes from these on the in-bye fields for crossing.

#### Ewes in Lowland Crossing Flocks

On the assumption that farmers on the uplands or hills would claim the upland or hill subsidy for their ewes the remainder, or .8 million, represent breeding sheep maintained in lowground flocks (Table 2 and Map 9). As with the upland flocks, no precise information was available as to the breed structure of the lowland flocks. It would appear, however, that the main breeds, in order of importance, are Half-Bred, Blackface, Greyface and Cheviot ewes. The Half-Bred and Greyface ewes are maintained in regular flocks where they are crossed with Down rams to produce Down-Cross lambs (Map 8). The Blackface ewes are mainly flying flocks of cast ewes bought from hill and upland farmers (Map 6). As on the uplands, these flying flocks are crossed with the Border Leicester ram to produce Greyface lambs. Cheviot ewes on lowland farms are maintained in both flying and regular flocks and are crossed with either Border Leicester or Down rams to produce Half-Bred or Down-Cross lambs (Map 7).

Regular flocks are most commonly found on the various forms of livestock feeding and cropping farms, so that they are concentrated in the eastern lowland areas (Map 4). They are not, however, as

popular as flying flocks on the more intensive types of cropping farm because the intensive cropping farm often does not have a sufficiently large acreage of ley grass to support the necessarily quite large flocks which must be kept if regular-aged sheep are to be maintained. On the other hand, flying flocks are suitable to almost any acreage and can easily be adjusted from year to year to suit the amount of grass available. Moreover, on some of the more intensive cropping farms, particularly in the Lothian coastal strip and in parts of east Fife, east Perth and south-east Angus, no breeding sheep are kept (Map 9).

#### Organisation and Management of Regular Flocks on Lowland Farms

To be economically viable, regular flocks, whether on hill, upland or lowland farms, must be of considerable size. No statistics are published for Scotland on these flock sizes, but it is known that lowland flocks are usually of the order of 100 to 500 or more breeding sheep of all ages. Most of these are in age groups from  $1\frac{1}{2}$  years (gimmers) to  $5\frac{1}{2}$  years (three-crop ewes), but some of the ewe lambs, too, are bred on the better lowland farms. Each age group receives somewhat different treatment, including the time of tupping, treatment at lambing and the types and amount of feed given to them at different times of the year. It is largely because of the special treatment for each age group that it is found necessary to employ a skilled shepherd on farms with regular flocks. Moreover, if he is to be fully employed, the flocks are usually larger than the more easily managed flying flocks of cast ewes which can often be handled by the farmer himself. Although each age group of the regular flock receives different treatment there are general patterns of management for



feeding which apply to all age groups in particular areas.

In the eastern lowlands regular flocks are most commonly found on stock rearing and feeding and cropping farms. They are most common in Aberdeenshire and the Merse of Berwickshire where the five or six year rotation usually consists of one to three years ley grass, one year of turnips and two to three years of grain crops. The breeding flock is maintained on ley grass throughout the spring, summer and early autumn. Then, after harvest, ewes are moved on to the corn stubbles for several weeks thereby allowing the grass to grow and at the same time reducing the build-up of sheep diseases. At tupping time in late September and October they are moved back to the grass fields and remain there throughout the autumn and winter. During the winter months, however, they receive supplementary box feeds and are usually fed turnips. These may be brought to them on the grass fields but it is a common practice to feed ewes on the turnip break for several hours each day because the exercise of walking between the grass and turnip fields is felt to be beneficial. It will be apparent from the description that grass and turnips are a vital part in the maintenance of regular flocks in eastern arable areas. It is chiefly because rotations in the Lothian coastal strip and in Strathmore and Fife have only one or no years of grass and often potatoes or sugar beet in place of turnips in the root break that regular flocks are comparatively fewer there<sup>45</sup>.

In the central and south western lowlands the management and maintenance of regular flocks are similar to those in eastern Scotland but grass is more important and turnips less important as feeding crops. Arising from this difference, Greyface ewes, which are able to thrive well on a diet mainly of grass, in contrast to the Half-Bred which



requires more and better feeds in the form of turnips and stubbles in addition to grass, predominate in the central and south-western lowlands (Map 8).

The milder climate and better feeding in the lowlands result in higher lambing rates and earlier lambing in lowland regular flocks than in those on the uplands and hills. Lambing rates on the lowlands are from 130 to 180 lambs per 100 ewes, compared with about 110 to 140 for upland cross-bred flocks and 75 to 100 for pure-bred hill flocks (Table 4). The lowland ewes are tupped in September or early October and lamb in February or March; those on the uplands and hills are tupped in October and November to lamb in March and April.

#### Breed Distribution of Regular Lowland Flocks

Half-Bred Flocks:- Half-Bred ewes account for well over half the total ewes in regular lowland flocks in the east of Scotland. They account for over three-quarters in the lower Tweed valley and probably over half in the other eastern lowland areas. Being basically an arable breed they are not important in the west of the country (Maps 8 and 9).

Greyface Flocks:- Unlike the Half-Bred, the Greyface ewe thrives and produces good lambs on second-quality arable and semi-arable farms. Under Scottish conditions this means that the Greyface ewe predominates in regular flocks throughout the central and south-western lowlands. It is also important on the more marginal farms of Aberdeenshire and parts of the east central area (Maps 8 and 9).

Cheviot Flocks:- The distribution of regular Cheviot flocks resembles that of the Greyface in that they are generally kept on second

quality lowland farms. But, like the Half-Bred, the Cheviot ewe requires a dry climate and does not produce well on grass alone so is not suitable to the western marginal areas. It is most important in Aberdeenshire and in a few small areas in the south-east (Map 6). Almost all the Cheviot ewes in lowland flocks are North Country Cheviots and are crossed with the Border Leicester or Suffolk ram to produce Half-Bred or Down-Cross lambs.

#### Organisation and Management of Lowland Flying Flocks

The vast majority of lowland flying flocks comprise hill ewes. The main reason for this is that hill ewes form about two-thirds of the total breeding sheep in Scotland and so would be expected to provide the majority of cast ewes for further breeding on lowland farms. Moreover, regular upland or lowland flocks do not supply many cast ewes for further breeding because, unlike the hill ewes, they can be bred until they are ready for slaughter or for feeding for slaughter rather than for further breeding. In other words, it is the harshness of the hill conditions which necessitates the removal of ewes from the hill farms and it is the relatively better conditions of the uplands and lowlands which allows farmers there to breed hill ewes for several more years if they have flying flocks or to breed their own ewes until unsuitable for further breeding if they maintain regular flocks. As would be expected, Blackface ewes form the majority of the hill supplies and, indeed, they probably account for over half the total flying flocks of all breeds.

Flying rather than regular flocks are maintained on particular types of lowland farms. They are commonly kept on smaller farms because these farms can not support a sufficiently large flock of

regular breeding ewes to be an economic alternative. A similar situation arises on larger lowland farms, particularly cropping farms, when the acreage of grass is limited. Flying flocks are also found to be more suitable on farms where, although the acreage of grass is large, it is devoted to cattle. This is common on lowland dairy farms where winter grass is available for sheep flocks but the dairy cows need most of the summer grazing.

Arising out of the distribution of the types of farms where flying flocks are more suitable than regular flocks, flying flocks are most important in Aberdeenshire, the east central and the central and south-west lowlands (Maps 6 and 7). The main reason for the importance of flying flocks in Aberdeen is the presence there of a large number of small, usually second quality, livestock rearing and/or feeding farms (Table 4). Farms of this type are scattered throughout the lowland area and may be adjacent to larger farms of the same general type where regular flocks are kept. Flying flocks of Blackface ewes producing Greyface lambs tend to be found on the poorer farms whilst flying flocks of Cheviot ewes producing Half-Bred or Down-Cross lambs tend to be on the better farms (Maps 6 and 7). Flying flocks are common, perhaps more common than regular flocks, in the east central lowlands largely because winter feed in the form of grass and turnips is limited, the former because of the importance of cereal crops, the latter because of the importance of potatoes as a root crop. Moreover, what winter feed is available has traditionally been used for fattening cattle and sheep rather than for maintaining regular breeding flocks. This contrasts with the south-eastern lowlands or the Borders where, on similar types of farms, regular flocks have traditionally been given first preference for winter feed and numbers of feeding cattle and

sheep have been adjusted accordingly. Flying flocks of Blackface ewes account for almost all the flying flocks in the east-central area mainly because Blackface but not Cheviot cast ewes are available in large numbers at local markets.

The other main area of flying flocks is in the central and south-west lowlands (Map 6). Here they are important because large supplies of cast Blackface ewes are locally available and because flying flocks are a complementary sheep enterprise to the main enterprise of dairying. This is particularly true in the smaller dairy farms where all or almost all of the summer grass is needed for the dairy cows and hence ewe flocks, if kept, must be small and/or they must be sold in the spring with their lambs.

Apart from these areas, flying flocks are of significance only in several limited localities. Flying flocks of Blackface ewes are found on the coastal lowlands and islands of central and southern Argyll and along the Great Glen south of Inverness (Map 6). Cheviot flying flocks are important in Easter Ross and part of the Black Isle where they are usually crossed with a Suffolk ram (Map 7).

#### Regional Characteristics of Sheep Breeding

In previous sections the distribution, organisation and management of the main breeds of sheep in Scotland have been discussed individually. It is the purpose of this section to describe how the breeds exist in combination and give character to the sheep farming in each area or region. The five Scottish regions used by D.A.F.S. have been chosen as the major regions for discussion because statistics are more readily available for these rather than for other possible groupings<sup>46</sup>. Moreover, each of these regions exhibits a large degree of internal

uniformity and external or interregional difference as far as sheep enterprises are concerned. For both these reasons, then, it was felt desirable to use the conventional groupings.

#### The South-West Region

Hill sheep farming in the South-West Region is characterized by the pure breeding of Blackface sheep. This arises because the hill environment in the western Southern Uplands is one of high rainfall and heathery vegetation, both of which favour the Blackface over the Cheviot breed. The Blackface breed accounts for 87 per cent of the total of 650,000 sheep qualifying for hill subsidy in the region (Table 3). This number is not strictly comparable to that of the pure-bred hill sheep because it includes some of the upland cross-bred flocks but it does indicate the overwhelming predominance of the Blackface breed on the hill farms of the South-West. However, Cheviots are an important minority, with about 13 per cent of the total. These are found mainly in the east of the region on the drier grassier hills of eastern Dumfries (Maps 1 and 7).

In comparison with other hill areas of Scotland where Blackface sheep are bred pure, stocking and lambing rates are quite high. Stocking rates average about 1 ewe to 1 or 2 acres and lambing rates about 85 to 95 lambs per 100 ewes in most parts of the South-West. This is in contrast to 5 or more acres per ewe and 75 to 80 lambs per 100 ewes in the Highlands (Table 5).

The outstanding features of sheep enterprises on upland and lowland farms in the South-West are the importance of the Blackface and its first cross, the Greyface ewe, the association of these with dairying and the predominance of flying rather than regular flocks (Maps 6 and 8).

Blackface and Greyface ewes are of such great importance because they are more suitable than the white faced "stream" for the semi-arable and grassland types of farms of the area. In addition, surplus ewe lambs and cast ewes of the Blackface breed are available in large numbers from local hill farms. The importance of dairy cattle on most of the upland and lowland farms in the South-West Region (Map 4) has important consequences for sheep enterprises. Firstly it means that on most farms sheep are considered as a sideline to dairying and the numbers of sheep are adjusted to suit the needs of the dairy cattle herd. Because of this and also because many dairy farms are small family farms unable to support a large sheep flock or to employ a shepherd, flying flocks are much more common than regular flocks. This is particularly true in Ayrshire and Lanarkshire where the upland and lowland farms depend for most of their incomes on dairy cattle (Map 6). In Galloway and Dumfriesshire, on the other hand, farms tend to be larger and hence regular flocks assume greater importance. Moreover, in eastern Kircudbright and most of Dumfriesshire a higher percentage of the arable land is under cereals and root crops rather than grass, and as a result Cheviot and Cheviot cross ewes as well as beef cattle enterprises are also important in this area. Dairying, however, is still the main source of income on most farms (Maps 4, 6 and 7).

#### South-East Region

Whereas sheep are the most important enterprise only on the hill farms in the South-West Region, in the South-East they are the main source of income on both hill farms and a large percentage of upland and lowland farms. Moreover, in the South-East Region, the white-faced



stream, the Cheviot, and its first cross, the Half-Bred ewe, account for most of the breeding sheep and regular flocks are much more important than flying flocks.

The importance of sheep breeding on all types of farms in the South-East Region is partly due to the suitability of the area for sheep but a large part of the explanation lies in the evolution of farming types rather than any direct economic reason. The importance of sheep breeding in the South-East began in the 18th Century with the development of the Cheviot hill breed from the English Leicester and the Scottish Dunface, the latter breed having been developed from native breeds and the English shortwool by the monks on the Border abbey estates (see p. 8). This in itself does not explain the importance of sheep breeding in the region because the Blackface was developed at about the same time in Tweeddale. Rather, it was later, in the 19th century, when the present-day farming patterns were developed on the uplands and lowlands, that the differences became apparent. Then, whereas improved grass and dairying became associated with all but the hill farms in the South-West Region, sheep breeding became associated with cropping in the South-East. The arable and semi-arable nature of upland and lowland farms in the South-East Region accounts for the lesser significance of dairying but it does not explain why beef cattle breeding and rearing was not as important there as in the North-East Region on similar types of arable and semi-arable farms. This difference arose partly by chance in the sense that it was in the North-East Region that the Angus and Aberdeen breeds were developed and crossed to form the now world famous Aberdeen-Angus breed. It was also due to the fact that farmers in the North-East depended on local supplies of store cattle to fatten, while supplies



were readily available in the South-East from non-local sources, including the western dairying areas but particularly north England<sup>47</sup>. This meant that farms in the South-East could, rather than breed cattle, concentrate on sheep breeding to supply themselves and other local farmers with sheep for fattening. Moreover, although sheep breeding is now more important than formerly in the North-East and beef breeding more important in the South-East, the general emphasis in each area has remained much the same to the present day.

Given that sheep breeding is a major enterprise on most upland and lowland farms in the South-East, it now remains to explain why the white-faced types and regular flocks predominate. The importance of Cheviot and Half-Bred ewes on the uplands and lowlands arises in part because in the 19th century when these flocks were being formed the supplies locally available were chiefly of the Cheviot breed. However, in recent years, the Blackface hill breed has become much more important (Table 3) and replacements for Cheviot flocks now come from North Country Cheviot rather than South Country Cheviot flocks, so that some are imported from north Scotland. Hence, the original conditions of local supply no longer apply and do not explain why Cheviot and Half-Bred breeding flocks are still the main types used. The probable explanation for their continuing importance is that they are more suitable than the Blackface and Greyface breeds for the semi-arable and arable types of land use common to upland and lowland farms in the South-East. Regular flocks are much more important than in any other Scottish region for several reasons. The main reason is that upland and lowland farms in the South-East tend to be larger in acreage and hence can support larger flocks than their counterparts in other regions (Table 4). Arising from this, regular flocks of

different ages, which make it worthwhile to employ a shepherd, are more common features than elsewhere. However, lowland sheep flocks, particularly regular flocks, are not kept on all farms of the South-East. They are most common in the lower Tweed valley in the counties of Roxburgh and Berwickshire but less common in the Lothian coastal strip (Map 9).

As has already been shown, the Cheviot and its crosses are the predominant breed of ewe kept on farms of the South-East. If pure-bred hill flocks alone are considered, however, Blackface outnumber the Cheviots, in this case South Country Cheviots, by about three to one (Table 3). On the uplands, regular flocks of pure-bred North Country Cheviots are found, but it is more common for a farmer to maintain North Country Cheviots in which part of the flock, usually the gimmers, are bred pure and the rest are crossed with Border Leceister rams to produce Half-Bred lambs. It is also quite common on the better uplands for a farmer to maintain, in addition to, or instead of, a North Country Cheviot crossing flock, a Half-Bred crossing flock from which Suffolk or Oxford Down-Cross lambs are produced. Greyface ewes crossed to produce Suffolk Down-Cross lambs are an important minority type throughout the uplands, particularly on the more marginal farms. These flocks have been becoming of greater importance in recent years partly because Blackface pure-bred flocks on the hills, and hence supplies of replacements, are more readily available than formerly and partly because the economic situation has forced upland farmers to search for a ewe which makes better use of the poorer parts of the upland grazings. As with Half-Bred flocks, the Greyface flocks are kept as the only upland type or in combination with other types such as North Country Cheviot on the same farm, in

which case each breed is usually maintained separately on the parts of the farm most suited to its requirements. The most common enterprise on lowland farms where breeding sheep are kept is to maintain a Half-Bred ewe flock to cross with a Suffolk or Oxford Down ram. Flocks of this type probably account for 80 or more per cent of the lowland breeding sheep in the region. The rest are composed mainly of Cheviot flocks which are crossed directly with a Suffolk ram, Greyface flocks crossed with a Suffolk ram and also a few flocks on the best arable farms where Suffolk Cross ewes are crossed again with a Suffolk ram.

#### East-Central Region

Blackface flocks account for almost all the pure-bred flocks maintained on hill farms in the East-Central Region (Table 3 and Map 1). These are found above the Highland line in middle and west Perth and in northwest Angus and also on the Lomond and Ochil hills of Kinross, west Fife and Clackmannan.

If the upland sheep subsidy statistics are used as an accurate guide to the importance of different types of flocks, it would appear that upland flocks are relatively less common as compared with hill or lowland flocks in the East-Central Region than in any other region excepting the Highlands. Upland flocks are not as important in the East-Central Region mainly because there are few truly upland farms in the area. This is not as apparent as it might be in the farm type classifications (Table 4 and Map 4) because many of what are classed as upland farms in the East-Central Region combine hill grazings on the Highlands with in-bye arable land in the glens or on the foothills of the Grampians. Under these conditions, although the farm is classified as an upland or stock rearing farm, pure-bred Blackface flocks are often

kept on the hill grazings and lambs from these, rather than upland cross-bred flocks, are fattened on the arable fields. This situation contrasts sharply with the North-East and South-East Regions where there is a more gradual transition of slope from lowlands to hills and hence upland farms are, in fact, commonly located entirely on land of intermediate elevation (Maps 10 and 11). There are, however, upland farms in the East-Central Region where the grazings are of a type and extent to support regular cross-bred flocks. These are mainly flocks of Blackface ewes crossed with Border Leicester rams to produce Grey-face lambs (Map 6). Flying flocks are most commonly found on the type of uplands farm already mentioned that combine hill grazings with in-bye arable land in the glens, in which case the hill flock supplies cast ewes for the crossing flock. They are also common on the smaller glen farms which have little or no hill grazing, in which case cast hill ewes are bought from other farmers. Flying rather than regular flocks are more suitable to these types of upland farms because the small area of in-bye available limits flock size. Regular cross-bred flocks are important on the larger glen farms with a limited acreage of hill grazing or on farms which include extensive, quite good quality, hill grazings capable of supporting a cross-bred rather than pure-bred flock. Farms of this latter type are confined to the intermediate slopes of the eastern Grampians and to the fringes of isolated hills such as the Ochils, Sidlaws and Lomonds.

As compared with the arable area, lowland flocks are less common in the East-Central Region than elsewhere in Scotland. This feature, which has been discussed on page 34, arises in part because of the greater importance of cereal and potato growing and less importance of ley grass in this as compared with other regions. It is also due to

the long-established practice of devoting the forage and turnip crops to cattle and sheep feeding rather than sheep breeding flocks. Another feature of lowland sheep breeding in the East-Central Region is the importance of flying flocks. Flocks of this type probably account for half of the total lowland breeding sheep, a proportion higher than every other region excepting perhaps the South-West Region. The reason for the preference for flying flocks on intensive cropping farms with little grass has been discussed on page 38 and it is because farms of this type are so numerous in the East-Central Region that flying flocks are such a high proportion of the total. Blackface ewes crossed to produce Greyface lambs are the most common breed of flying flock, but Cheviots crossed to produce Down-Cross lambs are an important minority group. Regular flocks tend to be found on the less intensive arable farms similar in type to those in the Tweed valley where regular flocks are also important. Half-Bred ewes are probably the most important type but Greyface and North Country Cheviot flocks are also present in considerable numbers. Almost all of these ewes are crossed with Suffolk rams to produce Down-Cross lambs.

#### North-East Region

Of the five regions into which Scotland is divided for agricultural purposes the North-East is the least suitable as far as a discussion of sheep breeding is concerned. It is not as suitable as it might be because it consists of two separate groups of counties each of which, although internally quite uniform, exhibits differences when the groups are compared. There is considerable justification for including the northern group, Orkney and Caithness, with the Highland Region but if this were done many of the otherwise useful statistics collected by

D.A.F.S. could not be used for either of the new Highland and North-East Regions. Therefore, rather than attempt such a reorganisation it was felt better to leave the regions as they were and discuss the two parts of the North East Region separately.

#### Moray Firth - Aberdeen - Kincardine

Although pure-bred hill sheep in the southern group - Nairn, Moray, Banff, Aberdeen and Kincardine - are almost all of the Blackface breed, there are only 70,000 hill subsidized Blackface ewes in the five counties; moreover a considerable number of these are cross-breds. Pure-bred flocks are the predominant type only on the highest hills where farms consist of extensive areas of rough grazings with little or no in-bye land. Most of the farms of this type are located in western Aberdeenshire and southern Banffshire (i.e. the Cairngorms). The others are found mainly on the upper parts of the Monadhliath Mountains. Cross-bred flocks, which account for about 20,000 of these, and most of the 46,000 ewes in flocks qualifying for upland subsidy in these five counties are Blackface ewes in regular or flying flocks and are crossed to produce Greyface lambs (Map 6). Typically they are found on uplands farms which combine hill grazings with improved in-bye land, much of which is above 500 feet (Map 10). Farms of this type are found throughout the area but are concentrated in upper Deeside and Donside. They are not, however, as common in Speyside or in the upland parts of Moray and Nairn (Map 6). It might be expected that these areas, in particular Speyside, would resemble Donside and Deeside but this is not the case. In Speyside, upland stock-rearing farms are commonly located entirely in the valley itself and consist mainly of improved land above 500 feet with very little



hill grazings. This is possible because the Spey valley has a much greater width than either upper Donside or upper Deeside. On the other hand, it is the restricted acreage of improved land in these narrower Aberdeenshire valleys which gives rise to the type of upland farm which combines hill grazing with in-bye valley lands and maintains crossing flocks. Upland farms in Nairn and Moray resemble those in Speyside in that they usually consist mainly of improved land and do not maintain cross-bred flocks.

It may be wondered why cross-bred flocks are not kept on the Speyside and Moray and Nairn upland farms that consist mainly of improved land, especially since it is quite common for upland crossing flocks to be kept on farms of a similar type in other regions, for example in the South-East (see p. 41). The difference is due mainly to the greater emphasis on cattle breeding in the Moray Firth upland area. This area is well known for the high quality of its Aberdeen-Angus beef cattle and, to achieve this prominence, farmers in the area have for many years given first priority to their beef breeding herd. Sheep, if kept at all, are only a sideline. Moreover, breeding flocks are not wanted in the summer because they would compete with the cows and perhaps lower the quality of the suckled calves. Under these circumstances flying but not regular flocks would be suitable. However, flying flocks are not common; rather, the wintering of ewe hoggs from hill farms is the most common form of sheep enterprise.

The impression given by this discussion may be that beef cattle breeding and rearing is much more important in Speyside and Moray and Nairn than in Donside and Deeside. However, it should be noted here that beef cattle are the main source of income and sheep are a sideline in both areas. It is simply that the sheep enterprises differ between



the two areas; cross-bred flocks predominate in Deeside and Donside and ewe hogg wintering predominates in Speyside, Moray and Nairn.

It has already been mentioned that both regular and flying flocks tend to be maintained on upland farms which combine hill grazing with improved in-bye lands. The decision as to which type of flock will be kept is essentially one of management. On some farms of this general type a pure-bred Blackface flock is maintained on the hill grazings and the cast ewes from this flock are used to form a flying flock which grazes the lower hill grazings and/or the in-bye grass fields. On other farms the entire hill grazings are devoted to a regular crossing flock. In this case the in-bye grazings may be used to stock more breeding cattle or to fatten Greyface lambs produced by the crossed Blackface ewes. The in-bye is also commonly used for maintaining all or part of the hill flock during the most severe periods of the winter.

Lowland crossing flocks in the five counties under discussion are concentrated in Kincardine, Aberdeen and Banff (Table 2). They are less numerous in Moray and Nairn not only because the lowland area there is more limited but also because the soils of these two counties lack certain trace elements, particularly cobalt, which give rise to poor quality sheep breeding stocks. This latter factor was a more important drawback in the past before the reason for poor quality stocks was known. However, even though sheep breeding is more common now that the reason for poor quality has been recognized and can be remedied, many lowland farmers there prefer to continue as before, i.e. keep no breeding sheep and winter ewe hogs or buy in lambs for winter fattening.

Throughout the area where breeding flocks are kept Half-Bred ewes are the most numerous type, but Greyfaces and North Country Cheviot ewes are also of considerable importance. An important feature of these lowland flocks is that the distinction between regular and flying flocks is much more difficult to make than in other parts of Scotland. Conventional flocks of each type similar to those in other areas are kept, but a large number, perhaps the majority, are what could be termed quasi-flying or quasi-regular flocks. These flocks consist of breeding sheep of two or three regular ages in contrast to the one or two regular ages for flying flocks and four or five for regular flocks as these terms are usually understood.

The importance and suitability of these intermediate or quasi-regular flocks on farms of the Moray-Aberdeen-Kincardine area are due to several reasons. One is that all types of lowland farms in this area tend to be smaller than their counterparts elsewhere in Scotland. Another is that a large proportion of most lowland farms in this area is devoted to ley grass and turnips suitable for supporting sheep breeding flocks in addition to breeding and/or feeding herds of cattle, which usually form the main source of farm income. These two factors in conjunction with the established patterns of movement of young breeding sheep have contributed to the importance of quasi-regular flocks but to fully understand this a more detailed explanation is necessary.

It has been mentioned several times previously that the smaller lowland flocks tend to be flying rather than regular flocks. In the Aberdeen area such conventional flying flocks are also found on small farms but it is more common to find a quasi-regular flock of younger breeding sheep. There is no single reason which explains why a

quasi-regular rather than flying flock will be kept, but two factors are usually involved, (1) enough cast ewes of a suitable type may not be available, (2) even if they are available, the cast ewes may not make as effective use of the feed available throughout the year as do the younger breeding sheep of a quasi-regular flock. In view of the second factor it may be wondered why regular flocks of the conventional type are not kept. Here again there is no hard and fast rule; indeed, some of these small lowland farms do have regular flocks in four age groups. But, especially if the flocks are small, say in the range of 50 to 100 breeding sheep, it has been found more profitable to keep two or three age groups. This arises because if a greater number of groups were kept at the same scale of flock size the shepherding of each group, requiring as they do separate management and feeding, would result in inefficiencies of scale and loss of income. These factors in themselves do not, however, account for the fact that similar types of farms to some of those which have quasi-regular flocks in the Aberdeen area support conventional flocks in other areas. The other main factor which gives rise to this difference is that farmers in the Aberdeen area specialise in buying in Cheviot and Half-Bred ewe lambs to sell as gimmers and young ewes. This practice will be more fully discussed in Chapter II but it is sufficient to note here that a large number of North Country Cheviot ewe lambs from Sutherland and Caithness are bought by Aberdeenshire farmers. They are then tupped in the autumn at an age of about eight months and are sold as "gimmers had lambs" a year later. In a similar manner, Half-Bred ewe lambs born in the Aberdeen-Moray-Kincardine area are bought by local farmers in the autumn, tupped and sold a year later as Half-Bred gimmers had lambs. These gimmers are then bought as replacements by



farmers with regular flocks in the same area and in south-east Scotland. It is also quite common in the Aberdeen area for a farmer to buy gimmers or one-crop ewes, take one or two crops of lambs from them, and sell them to another farmer who keeps them for two or three more years until their breeding life is finished. Both these practices, the buying of ewe lambs to sell as gimmers had lambs and the buying of gimmers or ewes to breed for two years is a common practice on the smaller lowland farms. It will be apparent from what has been said previously that these flocks do not fall neatly into the classification of regular or flying flock. In the absence of the recognized term they have been designated here and in the rest of the study as quasi-regular flocks.

#### Orkney and Caithness

In Caithness, North Country Cheviot ewes account for the great majority of the breeding sheep. Most of the pure-bred flocks are found on hill sheep farms in the southern part of the county, but a few are kept on crofts along the east coast. Elsewhere in Caithness upland stock rearing farms with North Country Cheviot crossing flocks are the predominant type. The usual practice on these farms is to breed part of the flock pure for replacements and to cross the rest to produce Half-Bred lambs. There are some Half-Bred flocks producing Down-Cross lambs but these are few because of the limited area of good arable land.

An important feature of Caithness farming today, and indeed for the past century,<sup>48</sup> is that the sheep stocks receive pride of place over all other farm enterprises. This emphasis has given Caithness-produced sheep a high reputation for good quality throughout Scotland

and in many parts of England. To maintain this deserved reputation Caithness farmers continue today, as in the past, to organise their farms around the sheep breeding flock. On hill sheep farms the ewe hogs are usually wintered away and the gimmers are left eild, both practices contributing to a large, well-formed breeding ewe. In addition, wherever possible, some or all the hill ewes are moved for part of the winter to in-bye land where they receive grass and turnips. Better conditions on the upland farms make the away-wintering of hogs and leaving gimmers eild unnecessary. However, to provide a larger ewe for crossing, the flocks are maintained for longer periods on the in-bye and in some cases, particularly where the entire flocks is crossed, they spend the entire year on improved land.

Orkney differs from Caithness and shows more affinity with the southern group of counties in that cattle breeding and rearing rather than sheep breeding are the most important farm enterprises. Indeed, if anything, the emphasis on cattle in Orkney is even greater than in Aberdeen itself.

As far as sheep alone are concerned, there are many similarities between Orkney and Caithness. As in Caithness, the North Country Cheviot ewe is the predominant type and is maintained in pure-bred or partially pure, partially crossed, flocks. Also, cross-bred flocks producing Down-Cross lambs are few because of lack of suitable land to support the Half-Bred ewe. Within these general similarities, however, there are significant differences. Because sheep are more or less a sideline in Orkney, the stocks are generally of a poorer quality than in Caithness; this applies to the Cheviot flocks, but particularly concerns the considerable number of mixed flocks of Zetland and Zetland cross Cheviot ewes which are found in Orkney. These



have resulted from the careless mixing of stocks imported from the mainland and from Zetland.

### Highland Region

As its name suggests, the Highland Region includes the greater part of the Highlands of Scotland. It also includes the numerous islands off the West Coast as well as Zetland in the far north and might more properly be termed the Highland and Island Region. However, the term Highland Region is used by D.A.F.S. and, because their data is often used in the study, it was felt confusion would be avoided by keeping the same nomenclature.

An important feature of sheep farming in the Highlands is the predominance of hill as opposed to upland and lowland flocks (Table 2 and Map 9). Moreover, this is true for each county in the Highland Region and applies to both farms and crofts. The mainland will be considered first. Hill sheep farms are by far the most predominant type of full-time farms (Map 4). These and most of the crofts (spare- and part-time farms) consist almost wholly of rough grazings, the main form of land use on the hills and mountains which occupy most of the area (Map 3).

Pure-bred North Country Cheviot flocks have almost exclusive use of the sheep grazings on hill farms and crofts in Sutherland and most of north and west Ross and Cromarty. These flocks, together with some in southern Caithness, account for most of the pure-bred North Country Cheviot flocks in north Scotland, and, indeed, in Scotland as a whole. Pure-bred Cheviot flocks are also important along the west coast of Ross and Inverness and on Skye, but most of these are South Country Cheviots. Elsewhere on the mainland Blackface pure-bred

flocks are the predominant, and on most farms the only, breed on hill grazings.

Upland and lowland flocks on the mainland are concentrated in four main areas which are (1) Easter Ross and the Black Isle, (2) the eastern Inverness coast and the lowlands and glens bordering Loch Ness, (3) coastal areas of mid-Argyll from Fort William to Oban, (4) the lowlands of south Kintyre (Maps 8 and 9). Flying flocks predominate in all these areas chiefly because the improved acreage, and hence flock size per holding, is limited and cast ewes are readily available locally. In the Easter Ross-Black Isle area flying flocks of Cheviot cast ewes producing Down-Cross lambs are the most common type, but there are also some pure bred North Country Cheviot flocks on lowland farms. In the other three areas Blackface flying flocks producing Greyface lambs are the main type of upland and lowland sheep enterprise.

The insular part of the Highland Region is dominated by crofting and since this has already been separately treated (see pp. 21-23) only a brief discussion will be given here.

Pure-bred flocks maintained on rough grazing account for most of the breeding sheep on the islands. The Blackface breed occupies all of these grazings excepting for Zetland where Zetland and Cheviot ewes are kept and on Skye where South Country Cheviots are an important minority. Crossing flocks are few and are confined mainly to the southern islands of Barra, Tiree, Iona, Lismore, Gigha, Islay and the Ross of Mull. High quality soils derived from limestone permit the production of Half-Breds and Down-Cross lambs on Iona and Tiree. Elsewhere Greyface lambs, produced chiefly from cast Blackface ewes, are the predominant type.



Summary: Distribution and Types of Flocks

It was stated in the introduction that this analysis would contribute much to an understanding of the general lines of movement of sheep for breeding (p. 5). In some instances specific movements were mentioned but more commonly they were implied. For example, from the information given it can be inferred that Cheviot breeding replacements are moved from Sutherland and Caithness to the Aberdeen-Moray area where they are cross-bred to produce Half-Bred and Down-Cross lambs. This arises, of course, because there are very few pure-bred Cheviot flocks in the Aberdeen-Moray area and Sutherland and Caithness are the nearest area of surplus Cheviots for cross-breeding. Similarly, Blackface ewes cast from pure-bred flocks on the western Southern Uplands are moved to nearby upland and lowland dairy farms where they are cross-bred with Border Leicester rams in flying flocks. These are only some of the more obvious ways this information can be used, but its full usefulness will not become apparent until the succeeding chapter, which is entirely devoted to an analysis of the movement of breeding sheep.

Another purpose of this discussion was to provide information which could be used to interpret the general patterns of movement of feeding sheep (p. 4). Its full use in this regard will become apparent in Chapter III. Suffice to say that the distribution of breeds shown here were very useful in determining the areas from which markets draw their supplies of each breed of feeding sheep and that the distribution of farm types (Table 4 and Map 4) contributes much to an understanding of the areas to which these lambs are moved.

## B. METHODS OF TRANSFER

Most of this section comprises an analysis of the methods by which the sheep for breeding and feeding are transferred between farms (p. 5) and since the vast majority of them are transferred via auction markets, the discussion is in large part devoted to the marketing system. Furthermore, since all the tables and maps showing movement of sheep for breeding and for feeding and much of the textual explanation of these are based on information gathered from the auction markets, it was decided to examine here all the sources of information, including D.A.F.S. and interviews with agricultural advisers, used in Chapters II and III.

It was also convenient to examine the ways in which the maps and tables were constructed from the auction market data. It should be noted, however, that the methods discussed are of a general nature, that is, they are not exactly the same as the methods used for the maps and tables of feeding and breeding sheep. Nevertheless, with a few minor alterations the methods described in this section apply to both. Moreover, with a few alterations, this general description of methods applies to the construction of tables and maps illustrating the movements of store cattle (Chapters V, VI and VII).

It should be noted here that the discussion of the auction market system also has been deliberately kept in general terms so that it can be used for both store sheep and store cattle. In this way, then, later duplication has been avoided without undue deviation from the theme of this chapter.

## Introduction

Until the 18th century agriculture in Scotland was primarily of a subsistence nature in which most farm products including livestock were consumed at home on the farms where they were produced. There was some movement of cattle and sheep within Scotland and to England from the 13th to 17th centuries but this was not on a regular or organised basis. Rather it was a haphazard movement involving the transfer of stock during clan and Border raids.<sup>49</sup> It was not until the 18th century that peaceful times and the development of a more commercial agriculture led to the organization of a regular system of stock marketing and movement. Then, from the early 18th century until the middle of the 19th century, Scottish cattle and sheep were moved "on the hoof" through a system of local fairs and regional markets from whence they were eventually distributed to farms throughout Scotland and England.<sup>50</sup>

Throughout the first half of the 18th century movement of sheep through markets and fairs was confined mainly to south Scotland. It was here that the effects of Agricultural Revolution were first felt in Scotland and it was here too, that the new breeds and crosses were developed (pp. 7, 13-14). Though Scottish sheep as a whole were not highly valued for their mutton or wool at this time, the sheep of these southern areas, with richer grazing and more careful breeding and selection, were superior to the old in-bred native sheep of the Highlands. Little is known of the trade within south Scotland at this time, but by 1757 an estimated 150,000 sheep were sent each year across the Border.<sup>51</sup>

During the second half of the 18th century large-scale sheep movements

also developed in the Highlands. They began in the Highlands after the clearances and the stocking of the Highland hills with the improved Border breeds, the Blackface and the Cheviot. Fairs and markets for these sheep spread rapidly throughout the Highlands so that by the early 19th century the numbers moved were as large as, if not larger than, those moved from the Borders. Indeed, at a slightly later date, it was estimated that 200,000 sheep passed through one market alone, Falkirk, for distribution to south Scotland and to England.<sup>52</sup>

During the second half of the 19th century the entire system of fairs, markets and droving, so graphically described by A.R.B. Haldane in The Drove Roads of Scotland, declined and was eventually replaced by a new system, marketing by auction and movement by rail and sea. Under the previous system of fairs and markets, prices had been decided between seller and buyer by private treaty. This proved to be unsuitable to conditions in the second half of the 19th century because of fluctuating prices arising from variations in the supply and demand for livestock. As Buchanan pointed out it was fluctuations in cattle prices rather than sheep prices which first led to the popularity of sale by auction.<sup>53</sup> However, such was the success of the new system for cattle that sheep, too, were soon being sold mainly by auction. The rise of the auction system occurred at the same time as the railway network was spreading throughout Scotland and auction markets were consequently located adjacent to the railways in various centres throughout the country. In some places, such as at Inverness and at Lanark, the auction markets were located in centres which had been important fair and market centres under the system of private treaty and droving. But, more often than not, the auction markets were located in new centres. And, as the auction trade grew, many towns, of which Falkirk

is a prime example, that had been important during the droving days lost first some, then all, of their livestock trade. This auction system has continued to be of importance to the present day, the only major changes being that new centres have arisen, old ones have declined or closed and most of the animals are now sent by road rather than by rail.

It has been shown that the most important reason for the rise of the auction system in Scotland was that its pricing system was superior to the system of pricing by private treaty, especially in times of fluctuating supply or demands. This factor has contributed to the continuing importance of the auction markets during this century, but other equally, if not more important factors have arisen which also contribute to its popularity. Chief amongst these new factors are credit facilities, variety of choice for buyers, and what may be termed special or mutually beneficial relationships between sellers and buyers on the one hand and auctioneers on the other.

### The Auction System Today

To understand the advantages to both buyers and sellers of the auction system it is necessary to examine the mechanism of sale in some detail, and although as described it may not be applicable to every market or every sale, it is generally representative of Scottish auction markets today.

Each auction company arranges for sales to be held on specific days throughout the year and publicizes them for several months in advance. The number and spacing of these sales is decided by the auctioneer and is based upon his knowledge of supply and demand in former years. This



gives him a general guide when to hold the sales but the specific date is arranged so as not to clash with sales held by rival firms within the same general supply and/or demand area.

As the day of a particular sale approaches the seller intimates to the auctioneer the number and type of livestock he intends to put forward for auction on the day of the sale. The farmer may have his own transport or arrange for it himself, but it is quite common for it to be arranged by the auctioneer. Then, on the day before or on the day of the sale itself, the animals are taken to the market premises. Here they are fed and watered and put into pens or lairages until the sale begins. While these arrangements are being made with the sellers, the auction company is also contacting their regular buyers. These, like the sellers, are known to have attended similar sales for particular types and classes of stock in previous years. They are sent completed or provisional sales catalogues as many days as possible before the sale. Depending upon these catalogues and their immediate requirements, the potential buyers will decide whether to attend this particular sale. Those who do travel to the market centre on or just before the sale day.

Sales of cattle and sheep, both store and fatstock, are sometimes held on the same day but, especially at the large centres or during the peak supply periods, each type is generally held on a separate day. For example, fat cattle may be sold on a Monday, fat sheep on the Wednesday, store cattle on Thursday and store sheep on Saturday. It is also quite common for the fat cattle and sheep to be sold one day and store cattle and sheep to be sold on another day. If this is done, the cattle and sheep sales are usually held at different times and/or in different auction rings within the market premises.

In recent years and at most markets the sales start at about 11 in the morning. This is convenient to both buyers and sellers because it allows them to do necessary farm chores before attending the sale. The sale then proceeds until all the stock have been sold if the price is satisfactory or withdrawn from sale if it is not.

There is a certain amount of discussion and even quite heated argument amongst sellers as to the best placings within the sale. Many sellers feel that prices tend to be lower at the beginning before a large number of buyers have assembled and towards the end of the sale after they have dispersed.<sup>54</sup> However, since the auctioneers are supposed to arrange the order of sale by lot, there is little the seller can do but to hope for a desirable positioning.

Sometimes, particularly in the case of cattle and rams, animals are sold individually, but it is more common for them to be sold in groups or lots of varying size. Wherever possible, store sheep are sold in uniform lots of 25 to 100 or even up to 200 per lot. The possibility of this being done rather than smaller lots being sold, will, of course, depend on the numbers put forward by the seller. Large lots are most common at market centres where farms and flocks are large, small lots are more common at centres which receive most of their supplies from crofters and small farmers.

As each lot is put forward the auctioneer begins with what he considers to be an appropriate starting price and raises or lowers it in accordance with the bids of the buyers. If the price falls and stays below a point which has been previously agreed upon between the auctioneer and seller, the auctioneer will consult the seller whose decision it will then be whether to sell at that price or to withdraw the stock from the sale in the hope of a higher price at a later date. If the



seller is not present and the same situation occurs arrangements will have been made beforehand as to what the auctioneer should do. On the other hand, if the price rises and stays above the agreed minimum, the auctioneer raises it as high as possible and sells the stock to the highest bidder. The new owner of the stock then makes arrangements for payment and removes the stock from the market premises. Payment is sometimes made by cheque or cash on the day of the sale but it is quite common for the buyer to make credit arrangements with the auction company.<sup>55</sup> If this is done, the auction company pays the seller and collects the agreed amount plus interest from the buyer at a later date. Since it is quite common for a seller to also be a buyer on another sale day or even on the same sale day as his stock was sold, the auction company may just credit his account with the price made rather than actually make payment in cash to him.

The appealing feature of the auction pricing system is that both buyers and sellers feel, as it were, that justice (in this case fair prices) is not only done but is seen to be done in an impartial and fair manner. If the seller is dissatisfied with the price he received he can only blame himself for not withdrawing his stock. Moreover, it is usually the case that many other sellers, too, have not done as well as expected, so that there is the consolation of numbers, in common terms, "the trade today was bad". On such a day, the buyers will, on the whole, be quite pleased and say that "the trade was good today". Then as often as not, the following week at the same market the roles of satisfied and dissatisfied customers will be reversed. This commonly occurs because the somewhat low selling prices the previous week discourage farmers from selling. Supplies the following week are, therefore, reduced but because of the good prices for buyers

the previous week more of them will attend and demand will be high compared with the supply available. Consequently prices will probably be higher than the previous week to the satisfaction of the sellers and to the dismay of the buyers. The essential feature of this system is that, although there are short-term disappointments, over a long period both buyers and sellers are usually satisfied. In any case, alternative methods would be unlikely to satisfy as many buyers and sellers as the auction system. If the stock were sold by private treaty it would be extremely difficult to arrive at fair price. Indeed, in recent years several schemes to sell store stock by this method foundered on the question of how a fair price was to be established. What happened was that the auction prices were used as a basis for bargaining or, if this failed, the auctioneers were asked to conduct the sales themselves using their knowledge of the trade to decide a reasonable price. The main advantage of the auction system in this regard is not so much that prices are always higher than what might be obtained by private treaty but that the price is decided and it is decided in an impartial way. Hence, even if the price is not what was expected the seller will have the satisfaction that there were numerous buyers present and he would have been unlikely to have arranged anything better privately. Similarly, the buyer, if disappointed at high prices, will know that he had a wide selection of stock from which to choose and probably could not have done better privately. In addition to these advantages, the regular customers of auction companies can be assured, within reasonable limits, of credit facilities. Moreover, if the customer is on very good terms with the auctioneers, he may receive the benefit of "inside" information beneficial to his particular requirements. This is understandable

under the circumstances and is really nothing more than is done for special customers in any modern business.

This historical discussion has traced the origin and development of the Scottish auction system and examined its functioning as regards movement of stock in general terms. The auction system as it pertains specifically to the movement of store sheep will now be examined.

#### Output and Movement of Store Sheep

In recent years, the breeding flock in Scotland has numbered about 3.8 million ewes and these have produced about the same number of lambs annually.<sup>56</sup> Of these 3.8 million lambs about 2 million are maintained on the farms where bred and the 1.8 million are moved off these farms to other farms in Scotland or in England.

These total movements were calculated by a somewhat complex process. In recent years about  $2\frac{1}{4}$  million store sheep have passed through Scottish auction markets annually.<sup>57</sup> This figure includes a  $\frac{1}{2}$  million ewes, gimmers and rams, which leaves the  $1\frac{3}{4}$  million lambs already mentioned. However, this figure is not an accurate indication of the proportion of the 3.8 million lambs which is moved through the markets because (a) some of the lambs sold in the autumn through the markets are bought by farmers who winter them and sell them again in the spring; (b) some of the lambs sold in the autumn are bought by dealers who sell them shortly afterwards in other markets; (c) some are moved privately, either by direct sale or between led or linked farms (glossary, page 446). Together these account for about  $\frac{1}{4}$  million<sup>58</sup> which should be deducted from the  $1\frac{3}{4}$  million to give  $1\frac{1}{2}$  million store lambs<sup>59</sup> moved through the markets. Hence the total moved through the

auctions is 2 million, comprising  $1\frac{1}{2}$  million lambs and  $\frac{1}{2}$  million ewes, gimmers and rams.

#### Sources and Limitations of Data

Except for A.R.B. Haldane's account which dealt with the period 1750 to 1850, there has been no study dealing specifically with the total or overall movement of Scottish livestock. Two reports have been published, one in 1933<sup>60</sup> and one in 1964<sup>61</sup>, dealing with some aspects of the movement but these were primarily concerned with the advantages and disadvantages of the auction system as compared with other possible methods of store stock transfer. It would appear, then, that other than lack of interest or inclination, the main reason for the neglect of this aspect of Scottish agriculture has been the difficulty of obtaining detailed information.

Regarding this study, at the outset it should be noted that no attempt was made to gather data on the 100,000 store sheep sold privately or moved between linked farms.<sup>62</sup> These types of movements were omitted because information about them was not readily available and, in any case, they formed only a small proportion of all movements. Moreover, it is known that the patterns of movement arising from these methods of inter-farm transfer differ little from those arising by transfer through the auction markets.

It will be apparent from the discussion of auction sales in the previous section that auction records are potentially extremely useful as sources of information for a study of stock movement. Fortunately, auctioneers at 66 store sheep markets, with a total throughput of 1.6 million store sheep during 1966, or 80 per cent of the total market throughput of store sheep, allowed access to their records of buyers



and sellers. The remainder, or 24 store sheep markets, did not allow access to their records but did provide an estimate of their throughputs which totalled 0.4 million during 1966 (Map 12). Records for 1966 only were analysed at the cooperating markets, not because of any restrictions imposed by the auction companies, but rather because of the limitations of time available. Even the data that were collected required some two years of fieldwork and involved 15,000 miles of travel between the various market centres.

The use of records for only one year as a basis for analysing store stock movements in Scotland does, of course, invite the criticism that the study would not be representative of any more than this one year and hence would be of limited use. This criticism could only be proved or disproved by studying several years, but this was not possible for the reasons given above. However, it was the agreed opinion of many of those with a knowledge of store stock movement who were consulted that the year 1966 was generally representative of the movement in recent years. The main qualification they suggested was that the number marketed during 1966 was somewhat lower than in other recent years.<sup>63</sup> More important for the purposes of this study, however, was that, to the best of their knowledge, the patterns of movement during 1966 were generally representative of those which have prevailed, with few major changes, for at least the past 20 to 25 years.

Another limitation is that 20 per cent of the throughput in 1966 was not recorded in detail. This was not considered a serious drawback because the markets that were not studied in detail were quite evenly spread throughout Scotland and hence the proportion recorded in each region was quite high. The region of poorest coverage was the South-West Region but even here well over 50 per cent of the total was

recorded. Moreover, it is the main patterns of movement rather than total numbers which are the primary concern of this study and these were easily identified from the 1.60 million store sheep which were traced. It should be further noted in this regard that D.A.F.S. frequently raises 10 per cent samples to use as estimates for Scottish and regional totals and has, in fact, recently done this for the movement of store lambs in Scotland.<sup>64</sup>

### Maps of Movement

#### Movement to Markets

Most of the farmers selling store sheep in Scotland sell them at the same markets year after year. Moreover, because farmers tend to sell at local centres, each market can be thought of as being surrounded by a catchment area or hinterland from which most of its supplies are drawn. The supply areas for each market overlap in varying degrees with rival markets in the same vicinity and the areal extent and shape of these supply areas is determined by many factors including the size of the market throughput, sheep stocking densities on the surrounding farms, lines of communication and competition from adjacent markets.

By consulting the auction records of store sheep sales, it would have been possible to prepare a map showing sellers' hinterlands for each market in Scotland. This map would have been useful as a general guide to movement to markets but it was not prepared because it would have been subject to too many limitations. One is that it would show only the main source area of all types of sheep and for all sales. This would be misleading because the supply areas often change considerably from sale to sale, particularly if different breeds or

types of sheep are being sold at the same market on different days. This change in supply areas is particularly striking at markets which sell both hill and lowland sheep. Owing to low stocking rates on the hills, the catchment area for hill sheep will be a large one in order to draw sufficient supplies, but that of the catchment area for lowland sheep will be much smaller. Moreover, the two supply areas may be mutually exclusive or overlap only to a small degree. Another limitation of such a map is that it would not be possible to show the hinterlands of all the markets on it. There are two reasons for this (a) there are some markets in Scotland which draw most of their supplies from dealers rather than directly from farmers and, since the dealers often buy in areas far removed from the market they supply, it would not be possible to indicate a hinterland; (b) the hinterlands of many markets overlap to a great degree with others in the same area and, if each were to be shown clearly, separate maps would have to be prepared for each market.

As an alternative to this type of hinterland map, it was decided to show the movement to market by a method of grouped hinterlands. The grouped hinterlands were constructed by making a distribution map of the regular sellers for all the markets in each of the five Scottish regions. These maps are not represented in the study but they formed a basis for them. The maps actually used were prepared by drawing a line around the main supply area for each regional group. Moreover, rather than a general map for each regional group, different maps were constructed for each breed and type of sheep moved. In this way, the problems of overlapping and changing hinterlands from sale to sale and from breed to breed were minimized. But this was done at the cost of losing the patterns of movement to individual markets. To remedy this,



the main lines of movement to the most important markets within each regional group have been discussed at appropriate places in the text, and the origin of the supplies for individual markets is sometimes given for specific breeds and types of sheep.

#### Movements from Markets

Recording and mapping the movement of store sheep from markets to farms presented somewhat greater difficulties than occurred on mapping the movement to markets. One difficulty was that the buyers at most markets or group of markets came from a widespread and discontinuous area. It was therefore not appropriate to construct market hinterlands for buyers as was done for the sellers. It is true that a line could have been drawn so as to include all the farmers buying at a particular market or group of markets but such a line would in many cases have included a large part of Scotland and northern England. Also, it would have included many areas in which very few farmers bought sheep at that market or group of markets; in other words, it would not show accurately the distribution of sheep to the farms within the hinterland line. Hence, rather than attempt to construct buyers' hinterlands, an alternative method was adopted. This involved the recording of the number, breed and type of all the store sheep sold at each market during 1966. These particulars, together with the name and farm name of each buyer, were recorded for each sale. Then, with the help of the auction market staff, the locations of all the buyers' farms were identified. To illustrate with a hypothetical example, in the books of a particular market it was recorded that on September 21, 1966 a Mr J. Smith of the Rigg farm bought 200 Blackface wether lambs. This information was transcribed and then the location

of the Rigg farm was identified as being near Forfar. When this information had been collected from all the markets visited, it was used to construct maps of movement by means of grid squares and representative dots. The first step in this process was to divide Scotland into 10 kilometer grid squares. These squares were given identification symbols and next to each symbol all the towns within the squares were listed. For example the 10 kilometer grid square represented by the symbol K4 contains the towns of Newbigging, Monikie, Inverarity and part of Dundee. Then, all buyers were assigned to the grid square to which the town nearest to their farm belonged. This was done for each breed and/or class of store sheep in order that the movements of each could be shown separately. Then, the numbers of each breed or class of sheep sent to each grid square were totalled for the regional market groupings for which sellers' hinterlands were constructed. Finally, dots representing the number of sheep distributed from each group of markets were placed in the grid square.

It should be noted that the grid square and representative dot method described above was used only for the Scottish buyers, and not for those which were moved to England. Furthermore, not all of the sheep staying within Scotland could be traced to precise farm locations. These features of the movement will be discussed in greater detail in later chapters of the study.

### Tables of Movement

#### Movement to Markets

It was shown in the preceding section that, because of the method of mapping by grouped hinterlands some of the detail of movement, in

particular the lines of movement to individual markets within the group, was lost. It was partly to provide more information on these individual markets and partly to provide useful data for interested persons, such as officials of D.A.F.S., that tables were prepared showing the throughput of each breed and class of sheep for each market individually. These individual market throughputs were then totalled regionally to correspond to the regional hinterland groups employed for mapping.

#### Movement from Markets

The distribution of each breed and class of sheep was mapped in some detail by the method of grid squares and dots already described, but here too, some detail was lost by showing the distribution from regional groups of markets rather than each market individually. However, tables were prepared showing the distribution to each county from each market as well as for the regional group.

#### Summary of Preparation of Maps and Tables

The entire process of tracing the movement of store sheep from the farms where bred to other farms is best illustrated by a specific example. For this purpose one breed and type, Blackface ewe lambs for breeding, has been chosen at random from the many examples available. The various steps taken to show the movement of these are listed below but at this point no explanations of the movement patterns will be attempted.

1. Farms regularly selling Blackface ewe lambs for breeding were listed and located. This information was collected for each market and then grouped regionally and nationally to show the main supply areas (Map 18).

The total number sold at each market during 1966 is given in Table 11 and is shown on Map 13.

2. The number of Blackface ewe lambs bought by each type of buyer and the name of his farm if he were a farmer rather than a dealer were transcribed from the sale books of each market visited. The towns nearest to each farm were then identified by the auctioneer.

3. This information on types of buyers and locations was used to divide the distribution from each market into Scottish and English buyers (Table 11 - SF = Scottish Farmers, SD = Scottish Dealers, EF = English Farmers, ED = English Dealers and Map 13).

4. For Scottish farmers only farm locations were assigned to grid squares and the number going to each grid square was mapped for each regional group of markets (Map 18). The grid squares were also totalled by market and county to show the distribution in numerical form (Table 11).

5. The numbers going to each English county and region from each regional group of Scottish markets were tabulated but not mapped (Table 24).

This discussion of the methods adopted provides a general guide or outline to the way in which the movement of store sheep will be shown in this study. But it will be necessary to qualify and add to it at appropriate places in the chapters which follow to show how it applies to the particular type of movement being discussed.



## CHAPTER II

## MOVEMENT OF SHEEP FOR BREEDING

## Introduction

The main features of the integrated system of sheep breeding which characterizes Scottish sheep farming today have been discussed in some detail in Chapter I. This system, in which the lowground and upland flocks depend ultimately upon the pure-bred hill flocks for replacements, gives rise to the movement of sheep for breeding which is analysed in this chapter.

It is probable that patterns of movement of breeding sheep similar to those of today have existed ever since the integrated system was developed in Scotland about a century ago. This is evident from scattered references concerning the movement of breeding sheep made in the First and Second Statistical Accounts and in numerous agricultural journals and reports. However, when all this information is pieced together no comprehensive picture of the movement of breeding sheep in Scotland emerges. The main reason for the failure of writers in the past to provide this overall view has been the lack of published information on the distribution and numbers of the various breeds and types of flock within the integrated system. Furthermore, although the auction markets have kept records for many years and these could presumably have been used to trace movement, no one has attempted to do this for the whole of Scotland nor, indeed, even for individual markets.

The first difficulty, that of lack of published information on breeds and types of flocks, has been overcome in the present study by methods already discussed in Chapter I. To reiterate briefly, these were: (1) Use of D.A.F.S. hill subsidy statistics which were made

available by breed and parish for the year 1966; these statistics, which have never been released on a parish basis before, formed the basis for the maps of pure-bred hill flocks (Maps 1, 6, 7 and 9).

(2) Use of D.A.F.S. upland subsidy statistics, which have been collected for one year, 1968, and give the numbers by parish, but no breed breakdown; together with numerous interviews they were used for constructing the maps of upland flocks (Maps 6, 7 and 9). (3) Calculation of the number of low-ground breeding sheep by subtracting the hill and upland sheep from the total breeding sheep in each parish for 1968. As with the upland flocks, this information was combined with information gained by interview and used to prepare distribution Maps of the breeds and types of lowland flocks (Maps 6, 7, 8 and 9).

The second problem, lack of information about the movement of breeding sheep, was solved by collecting detailed information from most of the store sheep auction markets in Scotland. The type of data collected at them and the way in which it was used to show movement have been discussed in Chapter I.

#### Numbers and Types of Breeding Sheep Moved

##### General

It has been shown (p. 65) that in recent years the total breeding flock in Scotland has been about  $3\frac{3}{4}$  million and from these about the same number of lambs have been produced annually. Under prevailing replacement rates of about 30 per cent for pure-bred hill flocks and about 25 per cent for upland and low-ground regular flocks this means that approximately 1 million lambs are used annually for breeding purposes and the others, or about  $2\frac{3}{4}$  million, are fattened for slaughter. In addition to the lambs, about  $\frac{1}{6}$ th of the total breeding flock, or .6 million sheep, are produced annually in the form of cast ewes. A

large number of these, about .3 million, are used as replacements for flying flocks and the others are fed for slaughter.

Consideration will be given first to the lambs. Of the estimated 1 million produced annually for breeding purposes the vast majority remain on the farms where they were bred to enter the breeding flock at  $1\frac{1}{2}$  years of age as gimmers. This is the usual practice in the pure-bred flocks. There are about 2 million ewes in flocks of this type and at a 30 per cent replacement rate approximately .6 million ewe lambs would be kept each year on these farms to replace the ewes which died or were drafted. In addition to these .6 million, another .1 to .2 million ewe lambs would be kept on farms where, although most of the flock is crossed, a proportion is bred pure to provide replacements. This leaves only about .2 to .3 million ewe lambs which are moved off the farms where bred to other farms.

During 1966, the only year for which numerical data on movement was collected, .172 million ewe lambs were sold through Scottish markets. This does not mean, however, that all the other ewe lambs for breeding, or about .82 million, were kept for flock replacements on the farms where they were bred. Most of them are used in this way but a proportion are sold by the farmers who bred them as ewe hoggs or as gimmers rather than as ewe lambs. However, it is difficult to estimate how many were sold in this way because some of the farmers who buy ewe lambs also sell them again as ewe hoggs or gimmers rather than use them as flock replacements. Thus, although it is known that .11 million ewe hoggs and gimmers passed through Scottish auction markets during 1966, it is not known how many were sold by the farmers who bred them and how many were sold by farmers who bought them as ewe lambs or ewe hoggs. It would appear, however, that perhaps half, .06 million, came from the



farms where they were bred. These, together with the .172 million, would give a total of .23 million which were sold from the farms where they were bred. Also, assuming that 1 million lambs were eventually used for breeding, .77 million were kept on the farms where they were bred and hence did not enter the store markets at any stage.

It may have been noted in this discussion that no mention was made of the breeding sheep moved between farms privately, that is, by private sale or between linked farms. These might account for a 10 per cent increase in movement and a corresponding decrease in retention.<sup>1</sup> However, the figures used above are no more than estimates and are for one year only so that this source of possible error is not a significant one. Moreover, the omission of these private transactions does not invalidate the patterns of movement because it is known that they are generally the same as those of sheep which move through the markets. They are similar because they occur for the same reasons, i.e. movement of replacements amongst flocks in the integrated system.

It has been mentioned previously in this section that about .6 million ewes are cast annually from Scottish flocks and that about .3 million of these would be used for further breeding in flying flocks. During 1966, .21 million were sold through the auction markets for this purpose; the rest, or about half that number, were retained on the farms where they were previously used in a regular breeding flock.

Most of the cast ewes for further breeding, whether kept on the same farm or sold through the markets, come from pure-bred hill flocks. This is partly due to the large number of such flocks as compared to the total breeding flocks in Scotland. But it is also due to the fact that low-ground and upland farmers are usually able to breed their ewes until they are unsuitable for further breeding so must be fattened at

home or sold for fattening. In contrast, a large proportion of the ewes which are no longer suitable for hill conditions can be bred for one or two more years under upland or lowland conditions (see also p. 36).

#### Sequence of Supplies

Breeding sheep moved through Scottish markets are sold as ewe lambs, ewe hoggs, gimmers or cast ewes. The ewe lambs are sold in the autumn at about 6 months of age, these lambs having been born in the spring of the same year from breeding sheep tupped the previous autumn. The ewe lambs are called ewe hoggs after the December of their first year and most of these which are sold are marketed from April to June at about 1 year of age. The ewe hoggs become gimmers at  $1\frac{1}{2}$  years of age at about the same time as they are sold through the markets to enter breeding flocks. Here they are bred for 3 to 5 years and then sold as cast ewes in the autumn for further breeding or feeding.

On logical grounds, one would have liked to trace the movement of breeding sheep in the sequence described above. That is, the ewe lambs born in the spring of a particular year would have been followed through their breeding life and possible movement from the ewe lamb stage in the autumn of the same year to the ewe hogg and gimmer stage of the following year to the final stage as cast ewes several years later. This was not possible, however, because records were not available over a period of years at many of the markets. Hence, only movements the year in which fieldwork began, 1966, were surveyed. This means that the ewe lambs marketed in the autumn of 1966 were the only part of the sequence born in the spring of 1966. The ewe hoggs and gimmers, marketed in the spring and autumn of 1966 respectively, were born in the spring of 1965 and the cast ewes marketed in the autumn of 1966 were born in the spring of 1961 or 1962. Although perhaps less than would have been desirable

in terms of logical sequence, the use of one year is satisfactory for the main purpose of the study which was to describe and explain the movement of the various breeds and types of breeding sheep. For this purpose it made little difference whether the logical sequence was followed; the main requirement was data on each type of movement, that is, on the movement of ewe lambs, ewe hoggs, gimmers and cast ewes. Moreover, since it is known that the distribution of flocks which gives rise to these movements has changed little in recent years, the main lines of movement of the different types of breeding sheep would presumably be much the same no matter which year or years in the recent past were chosen.

#### Sellers and Buyers

With the assistance of the auctioneers, sellers and buyers of breeding sheep at Scottish markets during 1966 were classified into two groups, dealers and farmers. Dealers, here taken to be those who buy store stock with the intention of selling them shortly afterwards,<sup>2</sup> are relatively unimportant as buyers, and hence sellers of breeding sheep in Scotland because most Scottish farmers want to know the area or even the specific farm from which they buy their breeding replacements (Table 7). Dealers are relatively more important as buyers and movers of breeding sheep to England but, since the English markets where they sell were not visited, it is not possible to say how large a proportion their supplies form of the total throughput at English markets.

Although most of the sellers of breeding sheep at Scottish markets are farmers, only the ewe lambs are known to come entirely from the farms on which they were bred. After the ewe lamb stage or in the ewe hogg, gimmer and cast ewe stages, the sellers may have bred the sheep but they could also have purchased them at any one of the four stages. For

example, the gimmers sold in the autumn of 1966 came from (a) farms on which they were born in the spring of 1965, (b) farms on which they were purchased as ewe lambs in the autumn of 1965, (c) farms on which they were purchased as ewe hoggs in the spring of 1966. A further complication in the same example is that farmers on the (c) farms may have bought the ewe hoggs from either (a) or (b) type farms. That is, farmers who buy ewe hoggs to sell them as gimmers can buy the ewe hoggs from farmers who bred them or from farmers who bought them as ewe lambs.

From what has been said above, it follows that a full analysis of the movement of breeding sheep would require that it be known for each buyer whether he intended to use the breeding sheep for his own flock replacements or whether he intended to sell them again and, if so, at what stage. This information was not collected, however, because it would have involved contacting and visiting each of the scores of thousands of buyers. An alternative source, the auctioneers, was considered but they could not spare the time and, in any case, they did not have a complete knowledge of the breeding practices of each of the thousands of buyers and sellers. Hence, a full or detailed analysis had to be abandoned in favour of a more general one.

In order to understand the method which was used it will be necessary to look at each stage in it separately. The first stage, that of constructing sellers' hinterlands for regional groups of markets selling ewe lambs was relatively straightforward and precise because the ewe lambs were all sold by farmers who bred them. Lines enclosing the main supply areas for each regional group of markets were based on the locations of sellers of ewe lambs at each market. The next stage, mapping the distribution of these ewe lambs when sold, was

also straightforward. The name of the buyer, his farm name, the number and breed bought and the date of purchase were all listed in the auction books. These were transcribed and the farm locations were then identified by the auctioneer. Then, as described on pp. 70 and 71, the locations were assigned to grid squares and the number of sheep distributed to each grid square was plotted and mapped, using dots to represent them. It was at the next stage, drawing the sellers' hinterlands for ewe hoggs, that the difficulties mentioned were encountered. It was not possible to differentiate between the farmers who were selling ewe hoggs they had bred themselves from farmers who had bought them as ewe lambs. All that could be done was to identify the hinterlands of all types of sellers irrespective of whether they had bred or bought the lambs. Then, the buyers of ewe hoggs were listed, located and mapped by grid squares. The next step, drawing the sellers' hinterlands for gimmers, was done in the same way as ewe hoggs. Here, too, it was not possible to differentiate amongst the sellers as to those who had bred the lambs and kept them to sell as gimmers, those who had bought them as ewe lambs to sell as gimmers or those who had bought them as ewe hoggs to sell them as gimmers. Therefore, a general hinterland showing the main supply areas of all these types was all that could be shown. Finally, the distribution of the gimmers to farms where they would be used as replacements were mapped by grid squares. The mapping of cast ewes was relatively uncomplicated; the sellers were all farmers with regular flocks and the buyers all maintained flying flocks.

#### Maps and Tables

The maps and tables which accompany the following discussion of

the movement of breeding sheep have all been based on information collected at Scottish auction markets. The maps of total throughput by breed and type (Maps 13 to 17) show all the markets which sold breeding sheep during 1966. For the markets which allowed access to their records it was possible to apportion the throughput amongst the four categories of buyers, viz. Scottish farmers, Scottish dealers, English farmers and English dealers. For the markets which did not allow access all that could be done was to show the estimated throughput with no breakdown as to type of buyer. Besides these maps of throughput by market there is a series of maps showing the collection and distribution of each breed and type of breeding sheep on a regional or grouped market basis (Maps 18 to 30). It should be noted that only the distribution from the co-operating markets is shown and then only for Scotland. The proportion of the total moved to England is shown in divided circles at the bottom of each map but their distribution within England was not mapped because it was beyond the scope of the study. It should also be noted at this point that a proportion of most breeds and types are bought by Scottish dealers (Maps 13 to 30). These are not shown in the divided circles at the bottom of Maps 18 to 30 because the dealers resell what they buy and these are eventually distributed to Scottish farmers. In other words, the sheep originally bought by dealers are eventually bought by farmers and as such are included in the "Scottish Farmers" proportion. Tables 11 to 23 accompany these two series of maps. They show the number of breeding sheep sold at each market in Scotland during 1966. For the non-co-operating markets only the estimated total numbers sold are given, but for the co-operating markets a breakdown is given by category of buyer. The number bought by farmers in each county is also shown for the co-operating markets.



Furthermore, on a separate series of tables the destinations of the breeding sheep moved to England are shown by county and region (Tables 24 to 28). These are not strictly accurate because some of the sheep moved by English dealers to markets in a particular English county will be distributed from these to other counties. But, in most instances these movements are within the same county or region from which the dealer comes and hence the final pattern of distribution would probably differ little from that shown in the tables.

All the tables in this chapter other than those listed above show estimated total numbers of throughput and distribution. These estimated totals were arrived at by raising the figures for the markets surveyed in detail to include those not surveyed. This process and the need for it can be best illustrated by taking a specific example. As shown in Table 6, all the markets selling Half-Bred lambs in the Highlands, North-East and East-Central Regions provided access to their records. But in the South-East markets covering 6 per cent of the estimated total and in the South-West markets covering 40 per cent of estimated total throughput did not co-operate. For various reasons which will become apparent later, it was useful to show the output and distribution of Half-Bred ewe lambs by region. To calculate the percentage output by region, it was necessary to use the estimated total throughput by region, that is, the "market surveyed" totals and the "market not surveyed" estimated totals had to be added together for each region (Table 6). To show the distribution by region involved a somewhat more difficult process. First, the percentage distribution for the markets done in each region were calculated. These percentages were then applied to the estimated total throughput which, as mentioned above, includes both the markets surveyed and the markets not surveyed. This

process was used to compile Table 7. The numbers of Half-Bred ewe lambs distributed from each region are estimates of the total numbers which would have been distributed if all the markets in each region had co-operated and if they distributed their lambs in the same way as the markets surveyed. Granted that numerical as well as percentage distributions were desirable, it will be apparent that the estimated total had to be used rather than the "market surveyed" total. If only the "market surveyed" totals were used, the South-East and South-West Regions would have appeared less important than they actually are. Of course, the estimates for Half-Bred ewe lambs as well as those for the other breeds and types are subject to error. But in almost every case the sample (or numbers surveyed) is over 50 per cent of the estimated regional total and hence provides a good basis for raising the sample distribution to that total.

In view of this discussion, it may be wondered why similar estimates were not made of the distribution from non-co-operating markets on maps. The reasons for the difference was that whereas the estimates for the tables were on a regional basis, those for the maps would have been on grid squares basis and this was felt to be too precise to allow the use of estimates.

#### Movement by Breed and Type

Having discussed the general background and methods used to show the movement of breeding sheep, the main patterns of movement will now be described and analysed. This has been done on a breed and type basis beginning with the hill breeds and proceeding to the upland and then the lowland breeds. For each breed, ewe lambs will be examined first, followed by ewe hogs, gimmers and finally cast ewes.

The essential or underlying cause of the movement of breeding sheep is the demand for replacements which arises within the integrated system of breeding in Scotland. The demand for replacements for regular crossing flocks gives rise to the movement of ewe lambs, ewe hoggs and gimmers and the demand for replacements for flying flocks gives rise to the movement of cast ewes. The cast ewes usually move only once, from the farms where they were maintained in regular flocks to farms where they are used in flying flocks. In some instances the younger breeding sheep, too, are moved only once. This occurs when ewe lambs, ewe hoggs or gimmers are sold by the farmer who bred them to a farmer who uses them eventually or immediately as replacements for his regular crossing flock. More commonly, however, the younger breeding sheep undergo several changes of ownership, each of which involves a separate inter-farm movement, from the time they are sold by the breeder until the time they are bought by the farmer who uses them as replacements. Three movements occur when the breeder sells the sheep as ewe lambs to a farmer who sells them as ewe hoggs to another farmer who in turn sells them as gimmer replacements to the final owner. Two movements occur when the breeder sells them as ewe lambs or ewe hoggs to a farmer who sells them again as gimmers. In most cases, the farmers who both buy and sell young breeding sheep do not have crossing flocks of their own; the "hogging" and "gimpering" of breeding sheep is only a sideline to supplement their main income from other sources. However, some of them do maintain crossing flocks and, if so, they usually keep some of the ewe lambs or ewe hoggs for their own use and sell the others.

#### Supply and Demand

If all types of breeding sheep were transferred directly between the breeders' farms and the farms where they were to be used as replace-

ments, the analysis of movement would be a relatively straightforward one involving little more than a knowledge of the distribution of breeds and types of flocks as given in Chapter I. If the movements were direct, they would simply involve transfers between the connected parts of the integrated system. Blackface ewe lambs, ewe hoggs or gimmers would originate in the areas of Blackface pure-bred flocks and be moved directly to areas where crossing flocks of Blackface ewes producing Greyface lambs were maintained. Half-Bred ewe lambs, ewe hoggs and gimmers would originate in areas where Cheviot crossing flocks producing Half-Bred lambs were kept and be moved to areas where Half-Bred flocks producing Down-Cross lambs were maintained and so on. Yet it is apparent from the preceding discussion that this simple or direct transfer is the exception rather than the rule.

As far as supply and demand are concerned, this lack of simple transfer means that, although in the final analysis the supplies come from farms in one part of the integrated system and move to farms in another part of it, there are intermediate stages in which the sheep move between farms which are not directly connected with the integrated system and, in fact, may have no breeding flocks at all. Hence, for the intermediate stages the sellers' hinterlands and the areas to which the sheep are distributed bear little or no relationship to the areal distributions of the connected parts of the integrated system. Moreover, not even the original supply and final demand areas within the integrated streams coincide with the distributions of each type and breed of flock within them. For example, the distribution of pure-bred hill flocks is not an accurate guide to the areas where surplus ewe lambs for eventual use as replacements in crossing flocks are produced and sold. Rather, different surpluses or perhaps no surplus at all occur because of variation in lambing rates from one hill area to another.



Furthermore, the demand for these surplus ewe lambs is not proportional to the distribution of crossing flocks. This occurs because some of the crossing flocks are partially pure-bred and hence produce a proportion of their own replacements.

### Markets

The main aspects of the supply and demand of breeding sheep, including an examination of the different types of sellers and buyers and causes of variations in the amounts supplied and demanded, have now been studied. These factors, when examined for each breed and type, provide most of the explanation why the movements of breeding sheep take place. They do not, however, provide information concerning the lines or patterns of movement by which the sheep are transferred from areas of supply to areas of demand. A discussion of these requires that the distribution from markets be examined in some detail.

It has been shown (pp. 68 to 71) that it was not possible to map the movements to and from individual markets. However, these movements can be inferred from the tables of distribution which record the number, breed and type of sheep distributed to each county from each market. This information, together with the grouped market supply areas and grid square distributions, provides a good indication of main lines of movement.

Having determined the main lines of movement, they must still be explained. This requires a knowledge of supply and demand but also involves an assessment of the influence exerted on movement by the markets themselves. The markets influence movement in various ways - by their prices, locations, size of throughput, type of sheep sold, credit facilities, and goodwill with customers to name a few of the many factors.

There is one more important feature of markets which, although already mentioned several times previously in other contexts, should be examined here in its relationship to lines of movement. This feature concerns the markets which provided access to information and those which did not.

The areas of supply and demand as shown on Maps 18 to 30 and Tables 11 to 23 and the use of these to infer the main lines of movement apply only to the markets surveyed. The importance of the markets not surveyed can be inferred from the estimated total throughput which is given for each breed and type, but no information is given as to supply and distribution areas and lines of movement. This limitation should be kept in mind when reading the analysis of movement of breeding sheep which follows and will, in fact, be obvious on numerous occasions. At this point it is sufficient to note that the limitation is not a serious one in any area excepting the South-West region. In all the other regions almost all the markets were done and in most cases these handled over three-quarters of the estimated total throughput (Table 6). Moreover, the markets not surveyed were well distributed in the sense that they were not concentrated in any one area. These factors taken together with the tendency for markets in one area to exhibit similar features of movement means that the discussion of the markets surveyed cover the main aspects of the entire movement. Even in the South-West, most of the markets and over half the throughput were recorded for most breeds and types (Table 6). Also, the main markets not surveyed were concentrated in Dumfriesshire (Maps 18 to 30) and hence it is only in this county that information was seriously lacking concerning the movement of breeding sheep.



### Movement by Breed and Types

In the preceding sections of this chapter, the most important factors concerning the movement of breeding sheep have been discussed in general terms. These factors, the most important of which are supply and demand, markets and lines of movement will now be examined for each breed and type of breeding sheep. The main streams within the integrated system will be considered in turn, beginning with the Blackface - Greyface stream.

### Blackface and Greyface Breeding Sheep

The areas where the Blackface ewe and its first cross, the Greyface, are important in Scotland and the types of flocks in which these are maintained have been described and illustrated (Maps 6 and 8) in Chapter I. Blackface pure-bred flocks are maintained, and are the predominant breed, on the hills of the central and west Highlands and the western Southern Uplands. Upland crossing flocks of Blackface ewes, most of which are regular flocks, are found along the fringes of the Southern Uplands, along the eastern Grampians and on the Ochil, Sidlaw and Campsie hills. Finally, flying flocks of Blackface ewes producing Greyface lambs and regular flocks of Blackface cross-bred (Greyface) ewes producing Down-Cross lambs are maintained in the lowlands of the South-West Region and from Perth to Aberdeen in the East-Central and North-East Regions.

In the final analysis, it is the Blackface pure-bred hill flocks which all the other flocks depend upon for their replacements. Upland and lowland flying flocks are replenished annually by the bringing in of Blackface ewes which are no longer suitable for hill conditions, and regular upland flocks depend upon the pure-bred hill flocks for supplies of ewe lambs, ewe hoggs and gimmers. These crossing flocks in turn

supply Greyface breeding replacements to the farms on which Greyface ewes are crossed to produce Down-Cross lambs.

For the purposes of analysis of the movement of breeding replacements between these flocks it is convenient to consider the movement of ewe lambs, ewe hoggs and gimmers together and to treat the movement of cast ewes separately. This was done because the younger breeding sheep are used as replacements for regular flocks and the cast ewes are used for flying flocks. Furthermore, the younger breeding sheep are often bought and sold several times between the time they leave the farm where they were bred and reach the farm where they are used as replacements (pp. 79-80); the cast ewes, on the other hand, are moved directly.

#### Blackface Ewe Lamb, Ewe Hoggs and Gimmers

During 1966, an estimated total of 78,000 Blackface ewe lambs, ewe hoggs and gimmers of which 40,000 were ewe lambs, 20,000 were ewe hoggs and 18,000 were gimmers, passed through Scottish auction markets. (Table 7). The movements of 88 per cent or 69,000, made up of 32,000 ewe lambs (81 per cent), 20,000 ewe hoggs (100 per cent) and 17,000 gimmers (92 per cent) were traced to their farms of destination (Table 6). Moreover, there was no region in which less than three-quarters of the estimated total market throughput was recorded (Table 6). Therefore, it can be assumed that the main areas of supply, demand and movement were identified for each breed and type and for each area in Scotland.

In analysing the estimated totals, it should be noted that the 78,000 movements recorded do not represent 78,000 separate sheep. Rather, this total includes a number of movements involving the same sheep marketed at different stages. This occurs, as described on page 79, because a proportion of the ewe lambs are sold again as hoggs and/or as gimmers. The 40,000 separate marketings of ewe lambs

represent 40,000 different sheep but a considerable proportion of 20,000 ewe hoggs and most of the 18,000 gimmers would be these ewe lambs being re-sold at a later stage. From various sources it can be estimated that about 6,000 of the ewe hoggs are marketed for the first time at this stage and that a very small number, perhaps 2,000, of the gimmers are marketed for the first time at that stage. Hence, taking the three types together it would appear that approximately 48,000 different sheep were marketed and that, because of the fact that some of these were sold twice or three times, 78,000 separate marketings took place.

#### Blackface Ewe Lambs

##### Supply

Assuming that most of the 1.9 million Blackface hill subsidized ewes (Table 3) are pure-bred and that lambing rates are about 75 per cent overall, approximately .7 million Blackface ewe lambs were produced in Scotland during the spring of 1966. Most of the breeding flocks in which these lambs were produced are self-replacing, for which purpose ewe lambs numbering about one-third the total number of breeding ewes must be retained. This leaves a surplus of only about 60,000 ewe lambs. If the estimates given above are accurate, about 48,000 of these were sold for breeding replacements as ewe lambs, ewe hoggs or gimmers. Most of the other 12,000 would have been fattened at home or sold for fattening, but some were probably moved privately for breeding.

If the 40,000 of the 48,000 surplus breeding sheep which were marketed as ewe lambs during the autumn of 1966 are considered further, it can be seen by comparing Table 7 with Table 3 that the output of surplus ewe lambs is not proportionate to the number of ewes on which hill subsidy was paid. For example, 42 per cent of the 1.9 million

Blackface ewes in receipt of the hill sheep subsidy in Scotland are in the Highland Region but only 16 per cent of the Blackface ewe lambs were marketed in this region. On the other hand, although the South-West and South-East Regions together contain only 40 per cent of the subsidized ewes, 75 per cent of the surplus Blackface ewe lambs passed through markets in these two regions.

Although part of this variation arises because of interregional movements to markets and will be discussed later, the main cause in that lambing rates vary markedly from place to place. Generally speaking, a lambing rate of 70 lambs per 100 breeding ewes is the minimum required for a hill flock to be self-replacing. Of the 70 lambs born, about half, or 35, are ewe lambs and, allowing for deaths and "poor doers", these are all needed to replace the hill breeding flock. Lambing rates of this 70 per cent minimum are common throughout most of the Highland Region and consequently there are few, if any, surplus ewe lambs to sell in normal years (Table 5). Indeed, as will be discussed more fully below, it is quite common for hill farmers in the Highland Region to buy rather than sell ewe lamb replacements. On the other hand, lambing rates of 80 to 90 per cent in the Southern Uplands (South-West and South-East Regions in Table 3) provide a surplus of 5 to 10 ewe lambs per 100 ewes and most of these are eventually sold for use as breeding replacements with regular crossing flocks.

Another factor which contributes to regional variations and the supply of surplus Blackface ewe lambs is that ewe death rates vary from place to place (Table 5). There is a tendency for farmers with high ewe death rates to keep a higher proportion of their ewe lambs for replacements than farmers in areas where death rates are lower. This factor is not as important as might be expected, however, because there



is a countervailing tendency for farmers with high ewe death rates to breed their ewes for five or six years rather than for four years which is the general practice elsewhere.

Lambing rates and ewe death rates go a long way towards explaining why there are areal differences in surplus ewe lambs as a proportion of breeding ewes but they do not explain why most of the surplus are sold as ewe lambs rather than as ewe hoggs or as gimmers. One reason is that if the surplus ewe lambs were wintered on the hill farm, the number of ewes would have to be reduced. This is not always profitable and, moreover, the ewe lambs are often in better condition in the autumn than they are in the spring as ewe hoggs. These considerations do not apply, however, if the lambs are wintered away on lowland farms during the winter months. Indeed, as will be discussed fully in Chapter IV, away-wintering is quite common from many hill farms but this is usually done only for the ewe lambs which are to be used for replacements for the hill flock. It is not commonly done for the surplus ewe lambs because, although wintering costs are usually offset by the difference in selling price between ewe hoggs and ewe lambs, most hill farmers do not feel that they receive sufficient remuneration for the time and expense required to arrange for winterings and to transport the ewe lambs to and from them. Indeed, the efficacy of away-wintering even their stock ewe lambs has been questioned by many farmers in recent years.

Most of the surplus ewe lambs are sold as ewe lambs but a proportion are sold as ewe hoggs or gimmers (p. 90). Although numerical data on the proportion sold as ewe hoggs or gimmers is lacking on a regional basis, it is known that it is most common in the Southern Uplands. The reasons for this will be discussed at greater length under the supply sections for these types of sheep. It is sufficient to note here that it is most common on hill farms along the fringes of the

Southern Uplands which combine hill grazings with a considerable acreage of in-bye arable land, much of which is land above 500 feet (Map 10).

#### Movement to Markets

Blackface ewe lambs for breeding were sold at 41 markets in 38 centres throughout Scotland during 1966 (Map 13). Twenty-eight of these markets, handling 32,000 or 81 per cent of total movement provided access to their records and from these the maps and tables of movement were compiled (Map 18 and Table 11). For reasons discussed in the preceding section, the distribution and throughput of these markets differs considerably from the distribution of subsidized Blackface ewes. Three-quarters of total ewe lambs marketed were drawn from hill farms in the Southern Uplands and passed through 18 markets in the South-West and South-East Regions. Moreover, 17 of these 18 markets handled less than 3,000 ewe lambs each and in total sold 12,000 whilst one market, Lanark, handled 17,000 or 40 per cent of the total for the whole of Scotland.

The importance of Lanark market for Blackface sheep of all types, in particular for ewe lambs, has arisen for several reasons. One is that the hill area in the vicinity of Lanark is, and has been for many years, an important one for the maintenance of pure-bred Blackface flocks (Map 6). Arising from this, towns in the area including East Kilbride, West Linton and Lanark itself have been important fair and/or market centres for Blackface sheep for at least 150 years. Important fairs for Blackface sheep were held at all these towns until 1857, at which time an auction market was established at Lanark.<sup>3</sup> Then, as the auction system grew and fairs declined, Lanark drew more and more of the local trade. Moreover, once established locally and aided by the development of rail and road transport, Lanark's hinterland for Blackface



sheep was gradually extended to encompass most of the Southern Uplands. Indeed, in recent years supplies of Blackface sheep at Lanark have been coming not only from the Southern Uplands but from parts of the south-west Highlands as well.

This discussion relates to the rise of Lanark as an important market centre for Blackface sheep but it does not fully explain why Lanark is so overwhelmingly important as a centre for Blackface ewe lambs. This arises not only because Lanark is the main centre for an extensive Blackface sheep producing area but also because it is in this area that most of the surplus Blackface ewe lambs in Scotland are produced (see p. 92).

The extensive area from within which Lanark market now receives supplies of Blackface ewe lambs can be illustrated by considering the largest single sale of Blackface ewe lambs in Scotland during 1966 which was held at Lanark on August 31. At this sale, the numbers supplied, by county, were as shown in the table below. (This and subsequent tables within the text have not been assigned numbers; they will be referred to by the page number, e.g. see figures, p. 95 ).

County of origin	Numbers from each county
Lanark	2,397
Ayrshire	1,895
Renfrew	300
Dumfries	2,463
Roxburgh	1,880
Midlothian	1,849
Peebles	1,992
Arran	320
Argyll	320
All counties	12,616

At this point, it is appropriate to discuss an important feature of supply which has not been examined previously and concerns the inter-regional transfer of stock at the supply stage. It has been left for consideration here because it is best illustrated with an example, in particular by the sale above which shows that Lanark draws supplies of Blackface ewe lambs from three of the conventional regions, the South-West, South-East and Highland Regions. In Table 7, however, the entire supply or throughput of Lanark market has been assigned to the South-West Region where it is located. Hence, considering this one sale alone, the production of Blackface ewe lambs has been artificially increased for the South-West and decreased for the South-East and Highland Regions. Moreover, this method of estimating regional output has been used throughout the study and has presumably led to a certain amount of error in all the tables. However, for several reasons the error is not as serious as might be supposed from this example. Most markets draw all or almost all of their supplies from the region in which they are located. It is only at the large centres and the centres which are located near the boundaries of two or more regions where an important part of the supply comes from regions outwith the region in which the markets are located. Moreover, these inter-regional transfers tend to cancel one another when all the markets and all the regions are considered together.

Considered as a whole, even the regional throughput of Blackface ewe lambs (which is, in fact, an extreme example of interregional transfers in one direction) is not in serious error. From sellers' lists it was apparent that all the markets in the South-West excepting Stirling and Lanark markets drew almost all of their supplies from within the South-West Region itself. This means, to begin with, that

almost all of the 8,000 ewe lambs sold at these 12 markets were bred on farms in the South-West. In addition, about 11,000 of the 17,000 sold at Lanark and about 2,000 of the 4,000 sold at Stirling also came from within the South-West. Hence, out of 29,000, about 21,000 were produced in that region. Moreover, the 8,000 in total which were moved to Stirling and Lanark from other regions were balanced to some extent by an outward movement for marketing. For example, a proportion of the 1,000 Blackface ewe lambs sold at Perth markets came from the eastern part of Stirlingshire.

It would have been more satisfactory, of course, if the sellers and numbers sold by each had been recorded and located for every sale at all the markets. If this had been done, the supplies for each market could have been assigned to their region of origin rather than to the region in which the market was located. This information was, in fact, available at the markets but it was not used for several reasons. One is that it would have involved the transcription of thousands of sellers' names, farm names and numbers of sheep sold. Then, each seller's farm location would have had to be identified by the auctioneers and, using this, the numbers originating in each region could have been determined. Indeed, this procedure was followed for the buyers of sheep at markets throughout Scotland. Because of the time and strain on the goodwill of the auctioneers involved there was a choice between surveying the sellers or buyers, but not both, in detail. The decision was in favour of a detailed examination of sellers or, in other words, the movement from markets to farms. This decision was based on the records of sales at a selection of markets which showed that most of the sellers' farms were located within the same region as the market, but that the buyers came from an extensive and usually discontinuous area embracing several

regions and, in some cases, most of Scotland and England. Therefore, it was felt that with little loss of accuracy the market throughputs could be taken as estimates of regional output and, rather than record each seller, samples could be taken to determine the market hinterlands. On the other hand, the hinterland approach was not suitable for buyers because of their widespread and discontinuous distribution and hence the more detailed and precise grid square representative dot approach requiring separate identification of each buyer was used. In this way, at the sacrifice of a small amount of error in regional outputs, the essential features of the entire movement were recorded using the limited time and goodwill available.

Outwith south Scotland, 23 markets sold some Blackface ewe lambs during 1966, these centres being spread over the entire central and west Highlands and in no case handling more than 2,000 in total. Moreover, in total these markets sold only 10,000 ewe lambs which, in view of the large number of Blackface ewes, reflects the low lambing rates and high replacement rates characteristic of most of the central and west Highland areas.

One further feature to be considered before examining the distribution of ewe lambs concerns the influence of prices on the movement from farms to markets. It is known that prices do vary from market to market and that these variations do influence movement to some extent. But for several reasons this influence is difficult to assess. One difficulty concerns the determination of the prices themselves. As described on page 63, sale of sheep by auction means that each lot or batch of sheep is sold separately at the highest price bid for it and it often happens that even on one particular sale day, each seller at the same market receives a different price per head for his sheep.

Therefore, for an individual farmer, the average price at a market may bear little resemblance to the price he actually received which may be due as much to the "luck of the draw" (p. 62) or other chance factors as it was due to the quality of the sheep sold. However, in spite of these limitations, it can be said that average market prices over a long period do reflect the quality of the stock sold.

Thus it can be seen from Table 29 that, although average prices for Blackface ewe lambs have varied considerably from one period to another at individual markets, for each period there have been consistent differences between the markets in different areas. From this information and from what has been said previously about market hinterlands, the conclusion can be drawn that Blackface ewe lambs from the Southern Uplands are of a higher quality than those produced in the Highlands. Furthermore, it would appear that the Blackface ewe lambs sold at Lanark are of considerably better quality than those sold at other markets drawing supplies from the Southern Uplands. Having said this, it still remains, however, to assess the influence of these variations of price and quality on movement to market.

In the Highlands, farmers with surplus Blackface ewe lambs are few and widespread and they tend to sell their surpluses locally so that markets for Blackface ewe lambs, too, are widespread and individual market throughputs are low. That is, Blackface ewe lambs of all types and quality are marketed at the same local centre more or less regardless of the price received. This arises because the prices at alternative markets may not be any higher, or, even if they are, the increased return may be more than accounted for by transport charges. This factor is of considerable importance in the Highlands where markets holding sizeable sales of Blackface ewe lambs are separated by long distances.



In contrast, supplies of ewe lambs and markets for them are more concentrated in the Southern Uplands. In consequence, hill farmers have a choice of markets at which to sell and over the years the pattern of marketing has developed whereby the best Blackface ewe lambs are marketed at Lanark whilst the others are sold at the nearest local market. It is mainly for this reason that prices at Lanark tend to be higher than at other markets in the area (Table 29). The origin of this pattern is difficult to trace but it is probable that it began in the late 19th century after Lanark had already become established as an important local market. It would appear that even at that time prices at Lanark were relatively high because the Lanark type Blackface, a larger and blockier type than others in the south (see p.219), was in high demand for crossing with the Border Leicester because of the size of the Grey-face lambs it produced. Then, as transportation lines were extended and improved, farmers from as far away as the Lammermoors in Berwickshire and the Isle of Arran off the west coast began sending their best ewe lambs to Lanark rather than market them all, as it were, indiscriminately at local markets. So it was that the present day pattern in which it is common for an individual hill farmer to market his best lambs at Lanark and his poorer ones at local markets developed. Hence, to fully understand the hinterland of Lanark market as illustrated by the sale of August 31, 1966 (see p. 95), it should be noted that the same farmers who send ewe lambs to Lanark may also send other ewe lambs to local markets. Furthermore, this pattern illustrates why it would be both very difficult and of little use to map hinterlands for each market individually.



Movement from Markets to Farms

## Types of Buyers

Ninety-five per cent or 38,000 of the estimated total of 40,000 Blackface ewe lambs marketed at markets in Scotland during 1966 remained in Scotland and the other 2,000 were moved to England (Table 7). In each case, dealers bought a proportion of the ewe lambs but these would eventually be bought by farmers, either from dealers privately or through markets where dealers sell. Hence, all the 40,000 ewe lambs would eventually be moved to farms in Scotland and England.

Movement to England

As will be more fully discussed later, the movement of Blackface and Greyface breeding sheep to England is relatively small as compared with the movement of Cheviot and Half-Bred breeding sheep. It is sufficient to note here that the main reason for this is that there are hill breeds in England, in particular the Swaledale on the Pennines, which serve a similar purpose in the integrated system of that country as does the Blackface in Scotland. In England, surplus ewe lambs, ewe hoggs and gimmers from Swaledale and other hill flocks are used on upland and some lowland farms for crossing with the Blue-headed or Hexham Leicester ram, a ram akin to the Border Leicester. Flocks of this type are kept on the harsher uplands and lowlands in a similar manner to the Blackface and Border Leicester flocks in Scotland. In consequence, there is little demand in north England for Blackface breeding replacements. Furthermore, the Swaledale cross Leicester ewe, called the Greyface or Mule, and the Swaledale cross Teesdale (or Wensleydale), called the Mashum,<sup>4</sup> are used for similar purposes as the Greyface ewe in Scotland and hence the demand for these, too, is limited. On the other hand, the English integrated system lacks equivalents to the Cheviot and

Half-Bred ewes which, as discussed previously (pp. 19 & 42), are best suited for crossing on good quality semi-arable and arable farms. Hence, it is these rather than Blackface or Greyface breeding replacements that form, and have formed for many years, the bulk of the movement of breeding replacements to England.

Little more need be said of the movement of Blackface ewe lambs to England excepting that they are bought at Oban, Lanark, Ayr, Newton Stewart and Reston markets and are distributed to farms in north England (Tables 11 and 24, Map 13). Dealers handle a greater proportion of this movement than they do in Scotland because of the longer distances involved and the unfamiliarity of English farmers with Scottish breeds and markets. English dealers, however, make it their business to know the Scottish breeds and types and where they are marketed. Also, by buying in bulk, they can cut overhead costs; in particular they can buy enough lambs to fill a lorry waggon (capacity 200-300 sheep depending on size of sheep) whereas individual English farmers may not need that many and hence would be paying for empty space if they went to Scotland themselves. In this regard, it should also be noted that it is quite common for dealers, English or Scottish, to purchase various types of breeding sheep and also feeding sheep at the same market, often on the same sale day. In this way, they are able to make more efficient use of their time and transport than most farmers. Arising from this, dealers are most important when farmers who want a particular type of sheep are far removed from the markets where they are sold. On the other hand dealers are of little importance if the sheep are moved short distances to farms because time and transport, even if not efficiently used, form a small percentage of total costs. Moreover, farmers are familiar with the types of sheep and know the auctioneers

personally at local markets.

### Movement Within Scotland

#### Types of Buyers

Almost all of the 38,000 ewe lambs staying within Scotland are bought by farmers themselves (Tables 7, 8 and 11 and Maps 13 and 18). Only 700 are bought by dealers and these, too, are eventually distributed, along with the 37,300 bought by farmers, to farms throughout Scotland. However, on these farms the ewe lambs are kept for different purposes. A proportion go to farms where they are kept for one year to enter a Blackface crossing flock as gimmer replacements, others are kept to sell as ewe hogs in the spring and still others are kept to sell as gimmers in the autumn one year after they were purchased. As previously mentioned (see p. 80), it was not possible to differentiate between these various types of buyers. However, from what was known about the marketing of ewe hogs and gimmers it would appear that about half of the 38,000 ewe lambs go directly to farms where they are kept as replacements and that the other half are re-marketed as ewe hogs or as gimmers. It is also known that there are particular areas within the total distribution area (Map 18) where one or the other practice is predominant. These will be examined in some detail in the following section.

#### Distribution to Farms for Use as Replacements

Most of the ewe lambs which are bought and kept for later use as gimmer replacements go to farms in the Highland, South-West and East-Central Regions. About half of the 4,000 ewe lambs distributed to farms in the Highland Region are bought for this purpose. Of these, a considerable proportion go to hill farms where they will be eventually used,

not as gimmer replacements for crossing flocks but as gimmer replacements for pure-bred Blackface flocks. This is uncommon elsewhere but arises in the Highland Region because lambing rates on some hill farms are so low that there are not even enough ewe lambs produced to replace the farmers' own flocks. The buying and keeping of ewe lambs is also common in the vicinity of Oban and Campbeltown and on some of the islands where they are used as gimmer replacements for crossing flocks producing Greyface lambs (Map 6).

Although most of the ewe lambs moved to farms in the South-West and East Central Regions are sold again as ewe hoggs or gimmers, an important proportion, perhaps 8,000 of the 23,000 staying within the two regions (Table 8), move directly to farms for later use as replacements. Farmers who buy replacements at this stage are found throughout these regions wherever regular crossing flocks of Blackface ewes are kept (Map 6), but they are particularly concentrated in the upland area of south Ayrshire, parts of Galloway and on the Sidlaw, Ochil and Campsie hills.

#### Distribution to Farms for Later Sale

Using the estimates for direct movement given above, about 28,000 of the 38,000 Blackface ewe lambs staying within Scotland were bought by farmers who would sell them again as ewe hoggs or gimmers. In other words, almost all the ewe lambs shown on Map 11, excepting those going to the areas mentioned above, were not used as replacements by the farmers who bought them. This statement is based on numerous interviews in the areas concerned but it is also apparent from a consideration of the regional marketings of ewe lambs, ewe hoggs and gimmers. For example, although only about 1,000 Blackface ewe lambs were distributed to farms in the North-East Region from markets in that



region, 2,200 ewe hoggs and 7,200 gimmers were marketed and distributed within the region (Table 7). Assuming that most of the 1,000 ewe lambs were sold again as hoggs or gimmers and that few breeders in the area sell for the first time at the ewe hogg or gimmer stage, it follows that almost all of the 8,500 ewe lambs and ewe hoggs moved into the North-East Region from other regions must have been re-marketed again as ewe hoggs and/or as gimmers to give a total of 9,400 in all.

The question arises why some farmers with regular crossing flocks buy in their replacements as ewe lambs but others buy them as ewe hoggs or gimmers. A full answer to this question would involve a much more detailed analysis than was possible for this study but it is essential for an understanding of the movements shown that it be answered, albeit in a general way. In respect of farmers who buy their replacements as ewe lambs and keep them to the gimmer stage, it can be said that this practice is most common on upland farms where the Blackface crossing flock is maintained on rough grazings but there is also a considerable acreage of in-bye land where grass, roots and cereals are grown. Provided that the acreage of improved grass is extensive enough and that it is available for sheep, it can be used for maintaining bought-in ewe lambs over the winter. These sheep, now in the ewe hogg stage, can then be moved to the hills where they will enter the breeding flock as gimmer replacements in the autumn. Most farmers who do purchase replacements at the ewe lamb stage have farms of this type, but not all farmers with farms of this same general type follow this practice. They may not do so for a variety of reasons including (a) the use of in-bye grass for other purposes such as outwintering cattle, wintering the hill ewes or feeding lambs, (b) the in-bye grass may be too limited to allow wintering of all the replacements needed, so that a proportion of them may be bought as ewe lambs and the rest bought

later as ewe hoggs or gimmers. Hence, on this type of upland farm it is very difficult to know what will be done regarding replacements unless the details of farm acreage and management are known. Lacking this information, all that can be said is that farms of this general type and both practices, the buying in of replacements as ewe lambs or at a later stage, are common in the South-West and East Central Regions wherever crossing flocks of Blackface ewes are kept and that there are concentrations of upland farmers who buy their replacements as ewe lambs in south Ayrshire, parts of Galloway and on the Ochils, Sidlaws and Campsie hills (see p. 104). However, there are types of farms on which the buying of ewe lambs is the exception rather than the rule. The most important of these types is the small upland farm where it is essential to make intensive use of the limited acreage and to do so the farm is stocked, winter and summer, to capacity with productive (i.e. bred from) ewes and cows. This type of farm is found in all the upland areas where regular crossing flocks of Blackface ewes are kept but they are particularly common in Aberdeenshire where they are found in the form of small upland stock breeding and rearing farms where beef cattle are the most important enterprise and crossing flocks are kept as a sideline. It is mainly due to the large number of farms of this type in Aberdeenshire that it stands out as the area in Scotland where fewest ewe lambs are moved directly to farms where they will be used later as gimmer replacements.

After this discussion of the reasons why all upland farmers with Blackface crossing flocks do not purchase their replacements as ewe lambs, it remains to examine the types of farms to which the ewe lambs which are to be resold as ewe hoggs or gimmers are distributed. As far as numbers are concerned, it has already been mentioned that about two thirds of the 38,000 ewe lambs are handled in this way. The areas



within the total distribution (Map 18) where farms on which this practice is concentrated are (1) the Galloway and Ayrshire lowlands, (2) the uplands and lowlands from Lanark eastwards to Berwick and north through Stirling, Fife, Perth and Angus, (3) the uplands of Aberdeen. Although farms in these areas differ considerably, they are, broadly speaking, similar in several respects concerned with the maintenance of ewe lambs for re-sale. The most important similarities are that as a general rule farmers who specialise in the buying and selling of breeding replacements do not have breeding flocks of their own but they do have surplus winter grass which is suitable for a winter sheep enterprise. There are, of course, many different forms this winter sheep enterprise can take, including the maintenance of a flying flock and the wintering of hill ewe lambs on a rental basis, but we are considering only those farms where the wintering of purchased Blackface ewe lambs is the chosen enterprise.

Within this general framework of similarity there are, however, many differences in the types of farms for which replacements are bought and sold. The South-West Region is characterized by, and differs from the rest of Scotland in that, the wintering of purchased Blackface ewe lambs is almost always associated with dairy farming. This enterprise, the maintenance of flying flocks and the wintering of hill ewe lambs on a rental basis are all common alternative sheep enterprises on dairy farms throughout the region. They are all suitable because they make use of surplus winter grass whilst the dairy herd is housed and can be dispersed in the spring when the dairy cattle are returned to the grass fields. The decision as to which sheep enterprise a dairy farmer will choose is based on many factors. At this point it is sufficient to say that although all these types of enterprise are found throughout the dairying area there are differences in emphasis from place to place.

Flying flocks of Blackface ewes are common on upland and lowland dairy farms throughout the area (Map 6), but the other two enterprises are more locally concentrated. Next to flying flocks, the wintering of hill ewe lambs is the most important sheep enterprise on dairy farms in Ayrshire and parts of west Lanark. But in lowland Galloway and in central and east Lanark, east Stirling and parts of West Lothian and Peebles it is the wintering of purchased ewe lambs for re-sale that is next in importance to flying flocks. There are many reasons for this difference in emphasis, but one of the most important appears to be differences in the traditional sources of supply and patterns of movement of these alternative enterprises. Thus, whereas it has been traditional for dairy farmers in Ayrshire to winter ewe lambs from hill farms on a rental basis it has been traditional for dairy farmers in Galloway and in the Lanark-Stirling-West Lothian area to winter bought-in ewe lambs from local markets, (i.e. from Castle Douglas and Newton Stewart in Galloway and Lanark in the Central Belt). A full examination of the origin and development of these differences would be a separate study in itself. However, at the risk of some over simplification, it can be said that the emphasis on wintering hill ewe lambs (hoggs) on a rental basis in Ayrshire has arisen because there are many marginal dairy farms there that lack surplus capital to spend on the purchasing of ewe lambs. Farms of this type are most commonly associated with small farm sizes and marginal land, a type which is common in Ayrshire. Elsewhere in the South-West farms of this type are found but they are fewer in relation to other types which are larger and/or are on better land and have the capital to invest in a winter sheep enterprise. This factor plus the supply of ewe lambs from local markets in the other areas but not in Ayrshire appear to be the main reason for this difference in emphasis.

Elsewhere in Scotland the wintering of purchased Blackface ewe lambs for later re-sale is not of a great importance as in the areas already discussed. The only real concentration outside the South-West Region is in Aberdeenshire. Here it is usually associated with upland stock breeding and rearing farms, particularly in the glens of western Aberdeenshire. These farms often have surplus winter grass for reasons similar to those of dairy farms in the South West, but in this case it is the beef cows which are housed or moved to the better grass fields, leaving the poorer ones for the ewe lambs. However, as will be discussed more fully in the following section, these farms often have surplus summer grass as well and keep the ewe lambs to sell as gimmers rather than selling them as ewe hogs, as is common on dairy farms.

#### Movement of Blackface Ewe Hogs

##### Movement to Markets

From April to June 1966, an estimated total of 20,000 Blackface ewe hogs, all of which were traced, were sold at 8 markets in Scotland. About 6,000 of these came from the hill farms where they were bred but the other 14,000 represent ewe lambs which were sold during the autumn of 1965, kept over the winter and resold in the spring of 1966. Hence, as mentioned previously (see pp. 78-79), these ewe hogs are not, in fact, the same sheep which were sold as ewe lambs during the autumn of 1966 and which have been considered in the previous section. However, it is known that the numbers and patterns of movement of these have altered little in recent years and hence the ewe hogs can be thought of as being representative of the ewe lambs of 1966 being marketed in the spring of 1967. Therefore, throughout this section, the ewe hogs will be referred to as if they were the chronological successors of the ewe lambs discussed earlier.

The 6,000 or so ewe hoggs being marketed for the first time come, as did the ewe lambs, mainly from hill farms in the western Southern Uplands. The retention of ewe lambs over the winter in this way is not a common practice on hill farms because on most of them winter conditions are too harsh to keep the ewe lambs on the hills, in-bye land is limited and what little there is of it is used for wintering the hill ewe lambs for stock replacements. Moreover, if the surplus ewe lambs are kept, the alternative is to winter them away on a rental basis or to reduce the number of breeding ewes, neither of which is often found to be repaid by the additional price received at the ewe rather than the ewe lamb stage. There are, however, farms which, although they consist largely of hill grazings, have a considerable acreage of sheltered and high quality hill grazings, usually at the lower hill elevations, and/or a large area of in-bye improved grass. It is on these semi-hill, semi-upland farms that it is common for the ewe lambs to be retained. They are often wintered on the lower hill slopes and on the improved grass fields along with the farmers' own stock ewe lambs. Indeed, it is common for the farmer who winters all his ewe lambs in this way to select the best ones in the spring for his replacements and to sell the rest. Farms of this quasi-hill type are found along the fringes of the Southern Uplands and are particularly concentrated in Lanark, parts of eastern Ayrshire and in the Galloway glens. Commonly, they combine rough hill grazings with a considerable acreage of improved land above the 500 foot contour (Map 10).

The main source of supply of Blackface ewe hoggs is, however, from farms to which they previously moved at the ewe lamb stage. It can be seen from Map 18 that these farms are concentrated north and south of the Southern Uplands, in the East-Central Region and in western Aberdeenshire. The types of farms which take in ewe lambs for later sales in these areas

have already been discussed in the previous section, but it remains to be explained here why it is that the marketing of ewe hoggs is so concentrated in the South-West whereas the ewe lambs for re-sale were distributed to all these areas in considerable number. The answer to this question has already been given (p.105) and involves management practices on the types of farms to which the ewe lambs were moved. In the South-West, the ewe lambs are wintered mainly on dairy farms and, because the spring and summer grass is needed for the cows, the ewe lambs are sold again in the spring as ewe hoggs. This is done on some of the farms in the East-Central and North-East Regions for similar reasons excepting that it is usually the beef stocks which require the summer grass. However, it is much more common in these regions for the ewe lambs to be kept over the summer to sell as gimmers. There are several reasons for this difference. First, it is much more essential for dairy than for beef cows to get the early spring grass. This is so because the dairy farmer depends directly on the sale of milk and the production costs of it are considerably lower off grass pastures than from winter rations, a large part of which is purchased. It is so important that the first spring flush of grass be devoted to the dairy cows that this alone may cause the dispersal of sheep in the spring even though later in the summer surplus grass may be available. However, more commonly the summer pastures, too, are stocked to capacity and if there is any rough grazings these are used for the non-productive dairy stock, young (followers) or old (dry cows). On the other hand, on many upland stock rearing and breeding farms beef cattle and sheep are complementary throughout the year. If the beef cows are in-wintered the grass fields are available for sheep as on dairy farms, or if they are out-wintered all year, they can be kept on separate parts of the hill or in-byre fields or graze together on the same fields. This is common for beef but not dairy



cows because the beef cows can be kept on little more than a maintenance ration which means that natural pasture, improved or unimproved, plus supplementary feed in the form of silage, hay, turnips and oats during winter is often, sufficient. Of course, the beef cow must yield a suitable calf annually but the high level and day-by-day production of the dairy cow, requiring better and more costly feed, is not essential. Furthermore, it is more common for the upland stock rearing farms who make a practice of buying ewe lambs for re-sale to have a quite extensive acreage of rough grazings more suitable for sheep than for cattle but this is often lacking from dairy farms. In this regard, it is known that a considerable number of the farmers in western Aberdeenshire who buy ewe lambs to sell as gimmers keep them on former arable land in the glens which was once part of small croft-like farms but was then abandoned, overrun by wild grasses, and now is amalgamated with other holdings.

The main sources of Blackface ewe hoggs are, then, dairy farms on which they were bought as ewe lambs and hill farms where they were bred and wintered and both of these are concentrated in the South-West Region. During 1966, 16,000 or 83 per cent of the total Blackface ewe hoggs marketed in Scotland were marketed in this region (Tables 6, 7 and Map 13). Elsewhere, 2,000 were marketed at two centres in Aberdeenshire, 1,500 at Inverness and 800 at Perth, but none were recorded as passing through markets in the South-East Region (Table 6 and Map 13). These 20,000 ewe hoggs were handled by a total of 8 markets, this number being much fewer than for the ewe lambs not only because of the few numbers marketed but also, in fact mainly, because the ewe lambs come from hill farms distributed over a wide area but the ewe hoggs come from a few concentrated areas (compare Maps 18 and 19). However, the pattern is similar in that Lanark market handles a large percentage of both



types of Blackface breeding sheep. Indeed, its proportion of Scottish total marketings of ewe hoggs was even higher than for ewe lambs, the proportions being about three-fifths and two-fifths respectively. As with ewe lambs, the supply area for ewe hoggs at Lanark was an extensive one covering most of south Scotland. However, the hinterlands differ in that the main supply area for ewe hoggs is nearer to Lanark and supplies come mainly from dairy rather than hill sheep farms. These features are illustrated or can be inferred from the ewe hogg sale given below used in conjunction with the ewe lamb sale on p. 95.

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Ewe Hogg Sale of June 8, 1966  
at Lanark Market

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County of Origin of Blackface Ewe Hoggs Sold	Number of lots from each county (average lot = 90 ewe hoggs)
Lanark	39
Ayrshire	10
Dumfries	8
Kirkcudbright	2
Stirling	1
West Lothian	6
Mid Lothian	3
East Lothian	1
Selkirk	3
Peebles	7
Berwick	2
Roxburgh	3
Fife	1
Kinross	1
Forfar	1
Northumberland	3
All Counties	91    Total 8,000 ewe hoggs

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At first sight the statement that there is a more compact hinterland for ewe hoggs than for ewe lambs may not appear to be accurate. But when total numbers are calculated on the basis of 90 ewe hoggs per lot and this is used with what is known, but not shown, regarding the distribution of sellers in each county, the compactness

of the hinterland becomes apparent. Indeed, about 75 per cent of the ewe hoggs come from within 15 miles of the market, including farms in the counties of Lanark, Ayrshire (east), Dumfries (north), Mid and West Lothian, Peebles and Selkirk. The fact that most of these are dairy farms explains why the buying of ewe lambs and selling of ewe hoggs is a suitable sheep enterprise on them, but it does not fully explain the concentration. It is here, rather than elsewhere within the dairy region, that this practice is concentrated largely because this is the dairying area closest to the main source of supply of ewe lambs, that is, close to Lanark market.

Only a few main points need to be made concerning the other markets. Although on a much smaller scale, Stirling market performs a similar function to Lanark in that it distributes ewe lambs to local dairy farms and receives a proportion back as ewe hoggs. Newton Stewart and Castle Douglas markets do this too, but they also receive a quite large proportion of their ewe hoggs from glen farms where the ewe lambs were bred and wintered. The other markets, Perth, Aboyne, Huntly and Inverness, receive supplies from local farmers, most of which bought the ewe hoggs as ewe lambs. Supplies of ewe hoggs are low in comparison to ewe lambs bought, however, because the majority are kept to sell as gimmers (see also p. 111).

#### Movement From Markets to Farms

The patterns or lines of movement and distribution of ewe hoggs is quite similar to that of ewe lambs. Few of either type are moved to England, the reason for this being the same in both cases (pp. 101 - 102). For similar reasons, too, almost all of both types distributed with Scotland are sold directly to farmers rather than to farmers via dealers (p. 102). Also, making allowances for the smaller numbers of ewe hoggs,

the patterns of distributions are much the same for both types (Maps 18 and 19). Moreover, the buyers of both types fall into two main categories, those who buy for their own flock replacements and those who buy for later re-sale. However, within these generally similar patterns there are many important differences. These will become apparent in the discussion which follows.

#### Distribution Within Scotland

An important difference between the distribution of ewe hoggs as compared with ewe lambs is that, although about the same percentage in each case is marketed in south Scotland, a much higher percentage of the ewe hoggs is distributed from these markets to farms in central and north Scotland. Seventy-four per cent of the ewe lambs and 79 per cent of the ewe hoggs were marketed in the two southern regions, but only one-third of the ewe lambs as compared with one half of the ewe hoggs were moved from there to the East-Central and North-East Regions (Tables 8 and 9). Furthermore, when the total distribution is examined it can be seen that 70 per cent of the ewe hoggs are distributed to farms in the East-Central and North-East Regions as compared with 35 per cent (or 47 per cent if the Highland Region is included) for ewe lambs.

If most of the ewe hoggs were bought as replacements for regular crossing flocks the explanation of this shift northwards would be relatively straightforward. For, as shown on Map 6, it is in the East-Central and North-East Regions that flocks of this type are concentrated. However, this is not the case; rather, most of the ewe hoggs are bought by farmers who sell them later as gimmers. Hence there is no obvious reason why a much lower proportion of the ewe hoggs than the ewe lambs should remain in the south for later sale. The main reason for this has been mentioned previously (see pp. 107-109), and, as discussed there,

involves differences between the types of farms on which ewe lambs and ewe hoggs are maintained for later sale. The dairy farms of south Scotland contrast with the stock rearing farms of north-east Scotland as far as the maintenance of breeding replacements is concerned in that on the former breeding sheep for later re-sale are complementary to the dairy cattle during the winter only, but on the latter they tend to be complementary throughout the year. Hence the pattern arises in which ewe lambs going to dairy farms in south Scotland are wintered and sold as ewe hoggs to farmers in north-east Scotland. There they are kept over the summer and then sold as gimmers along with other gimmers, most of which were bought in the south at the ewe lamb stage. It should be noted, however, that this is only the general pattern. In fact, a proportion of the ewe lambs bought by farmers in south Scotland as ewe lambs are kept right through the winter and summer for sale as gimmers and some of the ewe lambs bought by farmers in north-east Scotland are kept for the winter only and then sold as ewe hoggs. But, nevertheless, the general tendency is as described above and leads to a greater relative movement northwards at the ewe hogg stage. Little more need be said about the distribution of ewe hoggs at this point excepting that most of them are re-marketed as gimmers rather than going to flocks as replacements. This will be further discussed in the following section.

#### Movement of Blackface Gimmers

##### Movement to Markets

The supply areas for Blackface gimmers are the end product or culmination of the movements of ewe lambs and ewe hoggs which have been discussed in the two previous sections. These were: (1) movement to markets of 40,000 ewe lambs, three-quarters of which were marketed in the South-West and South-East Regions (Table 7), (2) distribution of

these to the South-West and South-East Regions (53 per cent) the East-Central and North-East Regions (35 per cent) and the Highlands Region (12 per cent) where they were bought for (a) later use as replacements, (b) later sale as ewe hoggs, (c) later sale as gimmers; (3) marketing of 20,000 ewe hoggs, most of which were bought as ewe lambs, the sellers being mainly dairy farmers in South-West Region, so that over 75 per cent of the supplies came from this region; (4) distribution of the ewe hoggs to the South-East and South-West Regions (31 per cent), the East-Central and North-East Regions (68 per cent) and the Highland Region (1 per cent) (Tables 8 and 9); (5) retention of some of these for replacements but the majority sold again as gimmers.

Arising from these movements and different ages of marketing, the market throughput by region for gimmers is very different indeed from that for ewe lambs and ewe hoggs (Table 7). In contrast to the concentration of three quarters of the total supplies of ewe lambs and ewe hoggs in south Scotland (South-East and South-West Region), markets there handled only one third of the gimmers. On the other hand markets in north Scotland (East-Central, North-East and Highland Regions) handled two thirds of the total gimmers but only about one quarter of the ewe lambs and ewe hoggs. This pattern of supplies of gimmers reflects the fact that most of the ewe lambs moved north were kept for sale, not as ewe hoggs as in south Scotland, but as gimmers. Moreover, a large proportion of the ewe hoggs marketed there were also moved north and most of these too, were marketed again as gimmers at northern markets. Thus, by the gimmer stage most of the supplies were concentrated in the areas where they were to be used as replacements for crossing flocks (compare Maps 6 and 20).

Of course, the pattern of marketing too, reflects this shift in



supply areas (Map 13). Indicative of this is that Lanark market, which handled about a third of the ewe lambs and three-fifths of the ewe hoggs, received only 850 of the 18,200 gimmers (Tables 6, 11 and 12). On the other hand Huntly and Aboyne in Aberdeenshire received 6,700 gimmers but only 2,200 ewe hoggs and 900 ewe lambs (Tables 11 and 12).

#### Movement from Markets

In contrast to the ewe lambs and ewe hoggs, all the gimmers were moved to farms where they would be used as replacements for crossing flocks. In fact, they would have been put to the ram shortly after they were bought in September and October of 1966. Because the gimmers are going to farms with regular Blackface crossing flocks the pattern of distribution of the two bear a close resemblance (compare Maps 6 and 20). It should be noted, however, that the distribution pattern for gimmers does not show up all the important areas of crossing flocks nor can it be taken as a completely reliable guide to the relative importance of these flocks in different areas. For example, few gimmers go to south Ayrshire but this is an important area for crossing flocks (see Map 6). Few gimmers go there, not because of lack of demand for replacements, but because farmers there buy in most of them at the ewe lamb stage (p. 104). Then too, there are farms where some or all of the replacements for crossing flocks are produced at home by pure breeding part of the flock and crossing the rest. These are important limitations but they do not appear to be concentrated in any one area, excepting perhaps south Ayrshire, and hence the distribution of gimmers can be used for general purposes as an indication of the regional distribution and importance of crossing flocks. These flocks,

and hence gimmers distributed to them, are concentrated along the eastern Grampians, on the Ochil, Sidlaws and Campsie hills, and in Galloway. Moreover, the gimmers supplied to these farms come from similar types of upland stock farms in the same general area. The explanation of this pattern is that, owing to various factors, including farm size and layout, combinations and amounts of improved and unimproved grazings, stocking densities and emphasis on other enterprises, particularly beef cattle, and personal inclination, some farmers find it more suitable to keep regular crossing flocks and others buy in ewe lambs or ewe hogs for sale as gimmers.

#### Movement of Blackface Ewes

During the autumn of 1966, an estimated total of 120,000 Blackface ewes passed through 59 markets in Scotland (Tables 7, 13 and Map 13). Eighty-three per cent or 100,000 of these were traced through 40 of the 59 markets, the lowest percentage recorded being 78 per cent in the South-West Region (Table 6).

Most of these ewes were sold by farmers with pure-bred hill flocks and they all would have been used as replacements in upland and lowland flying flocks to produce Greyface lambs. Unlike the replacements for regular crossing flocks which were moved at various ages and by several stages from hill farms to uplands farms, the ewes were moved directly from hill farms to farms with flying flocks. They were sold by hill farmers in September and October 1966 and would have been put to the ram on upland and lowland farms in October or November of the same year. Here, if in good condition, they would be bred from again the following year but if not they would be fattened or sold for fattening, after producing one crop of Greyface lambs.

Movement to Markets

## Supply

On the assumption that between one fifth and one sixth of the Blackface ewes in pure-bred hill flocks are cast annually and that about 1.6 of the 1.9 million Blackface ewes on which hill subsidy was paid are in flocks of this type (Table 3), something in the order of 300,000 Blackface ewes would have been removed from the hills during 1966. These cast ewes would have been disposed of in three ways. Some of them would have been unsuitable for further breeding so would have been sent to slaughterhouse directly or through fatstock auction markets. Others, although unsuitable for further breeding, would require fattening before slaughter. These would have been fattened on the in-bye of the hill farm or sold through the auction markets to other farmers who would have fattened them. The rest, when moved off the hills, would have been suitable for further breeding, which usually means crossing with a Border Leicester ram. Some of these would have been moved to better parts of the hill farm for this purpose but most of them would have been sold through the store markets as replacements for upland and lowland flying flocks.

Unfortunately, there were no data available concerning the breeding or feeding of the ewes kept by the hill farmers themselves. Nor was there any information on the number they sold for immediate slaughter. Information was available, however, on the numbers sold through the store auction markets for further feeding or breeding. During 1966, 239,000 were disposed of in this way, hence, assuming the total of 300,000 to be accurate, this means that about 61,000 were bred, fed or sold for slaughter by the hill farmers themselves. Furthermore, it

is known that, of the 239,000 sold through the markets, about half were used for breeding and half for feeding. The market throughputs by region of all Blackface cast ewes and the purpose for which they were used is given below, together with the estimated total number of Blackface ewes in pure-bred hill flocks.

Region	Estimated Number of Blackface Ewes in Pure-Bred Hill Flocks (000's)	Number Marketed (000's)		
		For Feeding	For Breeding	Total
Highlands	649	20	12	32
North-East	45	13	4	17
East-Central	269	26	18	44
South-East	155	5	11	16
South-West	482	56	74	130
Scotland	1,600	120	119	239

This table summarizes in quantitative form several interesting features of the regional variations in the supply of cast ewes in Scotland. The most striking feature is that very few ewes in proportion to the total breeding flock are marketed in the Highland Region. This is partially because death rates for ewes are higher (Table 5) and hence the number of them surviving to be cast is lower in this region than elsewhere in Scotland. But it is probably mainly due to the fact that ewes are kept on the hills for breeding for a longer time in the Highland Region. This arises because it is often the case that lambing rates are so low that there are not enough ewe lambs to replace the flock if a fifth or sixth of the ewes were cast annually. Because of this, ewes are often bred for 5, 6 or more years rather than for 4 or 5, as is common in areas where lambing rates and hence supplies of ewe lamb replacements are higher. This means that when the ewes are

finally withdrawn from the hill flock a greater proportion of them is more suitable for immediate slaughter than for further feeding or breeding and hence fewer in proportion are sold through the store auction markets. Indeed, there were few if any cast ewes sold through the store markets from Lewis and Harris even though a large number of Blackface ewes are maintained there (Map 1). This is, of course, an extreme case and arises because of the management of flocks by crofters there, in particular breeding the ewes until they die or are slaughtered at a considerable age. But it is indicative of the process by which the numbers marketed in proportion to total ewes is reduced in the Highland Region. Moreover, arising from the retention of ewes for a longer breeding life on the hills, a greater proportion in the Highlands than elsewhere are suitable for feeding rather than breeding if they are sold through the store markets. On the other hand, where hill conditions are better, enough ewe lamb replacements are available for ewes to be cast regularly after four years breeding on the hills. Also, more ewes survive to be cast, more are suitable for further feeding or breeding and more in proportion enter the store markets. Illustrative of this process is the South-West Region where a large proportion of the ewes is cast annually and of these, a large proportion is suitable for further breeding. It should be noted here, however, that the South-West also draws Blackface ewes from the South-East Region, that is, the numbers marketed are not all from hill flocks in the South-West Region itself. Even so, it is apparent from these figures that the output from the kindlier hills of the Southern Uplands is higher in proportion to total ewes than from the Highlands and a greater proportion of these is suitable for further breeding.

Before discussing the patterns of marketing, it should be noted that



the figures for breeding and feeding cast ewes are not completely accurate. At some markets, sales for each type are held separately but at most markets the two types are sold together on the same sale day. In this case the farmer sells them indiscriminately and it is for the buyer to decide which will be used for feeding and which are to be used for breeding. Because of this, it was necessary at most markets for the entire list of buyers to be examined with the auctioneer while he, to the best of his knowledge, indicated what use each buyer would make of the ewes he bought. In most instances the auctioneer was certain of the purpose they would serve, but there were some cases where he was unsure. This was particularly true for buyers who bought some ewes for breeding and some for feeding on the same day and often from the same seller. In cases such as this the auctioneer decided their use on the basis of price, the ewes for breeding usually fetching a higher price than those for feeding. This actual price was only an estimate, however, and varied not only from market to market but also at the same market on different days. Hence, errors are certain to have been made in these figures. It is probable, however, that errors in one direction were counteracted by errors in another, and that the totals of each type are, in consequence, reasonably accurate.

#### Movement of Supplies to Markets

Although fewer ewes in proportion to the total kept are marketed for breeding in the Highland area as compared with the Southern Uplands, supplies are drawn from hill farms throughout both areas wherever pure-bred Blackface flocks are maintained (compare Maps 1, 21 and 22). However, none were recorded for the Isle of Lewis and Harris where, as

mentioned on page 112, the ewes are bred until they die or are slaughtered for local consumption. The reason for this practice is basically that the crofters keep sheep as a sideline. Arising from this and because grazings are poor, lambing rates are low and hence ewes must be kept on for many years rather than be cast in the normal way. Moreover, the ewe stocks are generally poor and hence there is little demand for them for crossing purposes on mainland farms. Some are crossed on the better crofts of the island, but these are moved from the poorer to the better parts of each unit so do not pass through the auction markets.

Excepting Lewis and Harris, however, supplies were sent from all the Blackface hill areas to markets throughout central and south Scotland, of which there were 59, handling a total of 119,000 Blackface breeding ewes during 1966. Individual markets throughputs showed a large range from 100 to 18,000 and regionally, for reasons discussed on page 122, output was concentrated in the South-West Region where almost two thirds of the total were marketed. Most markets served only farmers within the same region, but as with the younger Blackface breeding sheep, Lanark drew supplies from the entire Southern Upland area. Moreover, in a similar manner as described on pp. 98-100, Lanark tended to attract the better and higher priced ewes from this area whilst the poorer ones were marketed at local markets (Table 29). It should be noted, however, that Lanark is not known as much for the high quality of its Blackface breeding ewes as it is for Blackface ewe lambs and ewe hoggs. And, although it does tend to draw on a wide area, most of the supplies of ewes are from local farms. Stirling market resembles Lanark in that it too draws supplies from outwith the South-West Region itself but they are drawn from the south-central Highlands rather than the

Southern Uplands. Hence, it can be seen that the throughput of the South-West Region is derived in part from adjacent regions and this must be taken into account when assessing regional outputs. However, with these exceptions, most of the markets in the South-West Region as well as all the other regions draw almost all of their supplies from within the regions where the markets are located.

#### Movement from Markets

For similar reasons as for younger Blackface breeding sheep, few Blackface breeding ewes were moved to England and those that were went mainly to farms in northern England, in particular to Cumberland and Northumberland, from adjacent markets in south Scotland (Tables 13 and 14). Within Scotland, dealers were of little importance because in most cases farmers buying were within easy reach of the markets where they made their purchases. This is apparent from Maps 21 and 22 and Tables 8, 9 and 16 which show that the ewes were gathered from and distributed to farms within local areas. Thus, ewes from hill farms on the Southern Uplands and south-central Highlands were gathered at markets on the adjacent uplands and lowlands of the South-West Region and were distributed to surrounding farms in the South-West, South-East and East-Central Regions (Map 22). Similarly, ewes from the east Highlands were gathered at markets in the East-Central Region and distributed to farms within the same region (Map 22). In other words, although the supplies come from a wide area initially, they were first concentrated in markets sufficiently near for most buyers to buy themselves directly rather than depend on dealers. This process is perhaps most striking in relation to the Highland Region. Here supplies are gathered by markets from over a wide area covering the entire central and west Highlands, including

numerous islands off the west coast. For example, Inverness market draws supplies from a large area extending westwards to Skye and North Uist whilst Oban draws supplies from the western mainland and from the islands from North Uist down to Islay. Hence, by this process of concentration, farmers are able to purchase ewes from distant farms at local markets within easy reach and little scope is given for the activity of dealers.

Considering the distribution itself little more need be said excepting that the ewes are distributed to the areas where flying flocks of Blackface ewes are maintained. These, as shown on Map 6, are concentrated on the uplands and lowlands of the South-West Region, in the lowlands of the East-Central Region, in parts of Aberdeen, in the vicinity of Inverness and on the mainland and islands near Oban.

#### Greyface Ewe Lambs, Ewe Hoggs and Gimmers

Generally it is on the farms to which Blackface breeding replacements move that Greyface ewe lambs for breeding are produced. These ewe lambs then pass through a similar process of marketing and movement as did the Blackface breeding sheep. Thus, the ewe lambs are sold to farms where some are kept as replacements and some are sold again as ewe hoggs. The marketed ewe hoggs are then bought by farmers who keep them as replacements or sell them again as gimmers. Finally, all the gimmers, whether bought at the gimmer stage or at the earlier ewe lamb or ewe hogg stage, are used as replacements in Greyface regular flocks to produce Down-Cross lambs.

Greyface Ewe LambsMovement to Markets

## Supply

Greyface ewe lambs are produced on all the farms in Scotland where Blackface ewes are crossed with Border Leicester rams. Flocks of this type, including both regular and flying flocks, are found throughout the uplands and lowlands of Scotland excepting for the far north and are particularly concentrated in the South-West, East-Central and North-East Regions. Although the total number of ewes in such flocks is not precisely known, it is probable that from 600,000 to 700,000 Greyface lambs<sup>5</sup> have been produced from them annually in recent years. Assuming half of these to be male and half female, there are about 325,000 Greyface ewe lambs from which breeding replacements can be chosen. Moreover, because the farmers who breed them do not require them for their own use as did the breeders of Blackface ewe lambs, the entire number could be moved to other farms for replacement purposes. This does not occur, however, because the demand for Greyface replacements is nowhere approaching the potential available. Unfortunately, no statistics are published as to the total number of Greyface ewes in Scotland but from what is known it would appear that these are something in the order of 100,000. Some of these, perhaps 20,000, are in flying flocks requiring cast ewes rather than young replacements. Hence, at a replacement rate of 30 per cent, the 80,000 in regular flocks would require about 25,000 gimmer replacements annually. And, allowing for some deaths between the ewe lamb and gimmer stage and for a small movement to England (Table 7), approximately 30,000, or only about 10 per cent, of the total Greyface ewe lambs produced are needed for replacements.



Moreover, some farmers maintain separate crossing flocks of Blackface and Greyface ewes and by doing this can produce their own Greyface replacements. This is not a common practice but it probably reduces the demand for bought-in replacements to 25,000. Therefore, as will be more fully discussed in the following chapter, most of the Greyface ewe lambs are not destined for breeding but rather are fed along with the wether lambs. This has important consequences regarding the movement of the ewe lambs for breeding. Because most of the ewe lambs are fed rather than bred, it has become a common practice for farmers to sell all their Greyface lambs, ewe and wether, together. They are, as it were, sold as if they were all destined for feeding. Thereafter, the onus is on the buyer of these lambs to select the ewe lambs he wants to use or sell again for breeding from amongst the total and to feed the rest. This is not to say that all Greyface ewe lambs for breeding are sold indiscriminately but it is the most common method. During 1966, an estimated total 5,200 Greyface ewe lambs were marketed especially as breeding replacements (Table 7). Comparing this with the estimated total demand of about 25,000 it can be seen that the great majority must have been sold without special designation along with Greyface lambs for feeding. Of course, as with Blackface replacements, some would have been sold for the first time by the breeder at the ewe hogg or gimmer stage but this is not a common practice. Even allowing that 5,000 were sold in this way, there were still about 15,000 Greyface lambs destined for breeding which were sold without differentiation from feeding lambs. Hence, it would appear that only about one quarter to one third of the Greyface ewe lambs for breeding which moved through markets during 1966 were designated as such. Moreover, of these designated ones only 57 per cent, or 3,000 of the 5,200 were in fact recorded

and the rest passed through non co-operating markets (Tables 6 and 17, Map 14).

As far as supply was concerned, these limitations were expressed in several ways. First, they meant that only a small percentage of the sellers of Greyface ewe lambs for breeding could be identified. These did, in fact, contribute to the construction of 'important supply areas' (Map 23) but in themselves they were not a sufficient basis for doing so. Second, for various reasons it could not be assumed that the markets important for designated Greyface ewe lambs for breeding were also important for undesignated ones; hence no reliable estimate of throughput for individual markets could be made. For both these reasons, then, regional hinterlands could not be drawn and no reliable estimates could be given for output of all Greyface ewe lambs for breeding on a regional basis. It should be noted that the regional output in numbers and perecent in Table 7 apply only to designated ewe lambs for breeding which represent only about one quarter of the total marketed.

Steps were taken to overcome these problems but even so the picture given here of supply areas is, of necessity, a less accurate and satisfactory one as compared with that for Blackface ewe lambs. The important supply areas shown on Map 23 were constructed using the designated sellers and from interviews with auctioneers. From these sources it was learned that most of the Greyface ewe lambs for breeding come from regular upland flocks rather than upland or lowland flying flocks of Blackface ewes. The main reason for this is that, generally speaking, regular flocks comprise better quality Blackface ewe lambs than the flying flocks and, arising from this, better quality Greyface ewe lambs are produced. There are many reasons for this

difference in quality of ewes, including selection of better replacements for regular as opposed to flying flocks, and differences in management and feeding. Moreover, arising in part from these differences and also in part contributing to them is the fact that breeders with regular flocks often try to produce high quality Greyface ewe lambs, some of which will be suitable for breeding. On the other hand, most farmers with flying flocks do not attempt this but rather are satisfied with producing lambs for feeding.

### Markets

On the assumption that most of the Greyface ewe lambs for breeding do come from areas where regular crossing flocks are maintained, it can be seen from Table 17 and Map 14 that very few were sold as such at markets in these areas. It is known that a large number were sold in Aberdeenshire markets but only 90 were recorded and these at Kittybrewster (Aberdeen) market outwith the main producing area (Table 17). In fact, it is known that a large number of Greyface ewe lambs for breeding are selected from those sold at Aberdeen markets, but for some reason designating them as such at the time of sale is less common there than elsewhere in Scotland. Indeed, it is probable that about 5,000 to 10,000 of the 62,000 Greyface lambs sold at Aberdeen markets during 1966 were eventually used as breeding replacements (Table 36). Moreover, these breeding ewe lambs were sold mainly at Huntly and Aboyne markets, both of which draw most of their supplies from regular upland flocks. Similarly, it is known that a considerable number, perhaps 2,000, Greyface ewe lambs for breeding, were sold at markets in the East-Central Region, but there were only 164 designated as such. Throughputs were probably higher than shown (Table 7) for

the South-West and South-East Regions as well but there the increase would not be as striking because more of the ewe lambs for breeding are sold as such in these regions. In summary, then, it is probable that there were about 15,000 to 20,000 Greyface ewe lambs for breeding sold during 1966 and that these came about equally from south Scotland (South-West and South-East Regions) and east-central Scotland (East-Central Region and Aberdeenshire). It is probable, too, that Huntly was the most important market and that Perth, Aboyne and perhaps Stirling as well should be ranked above Lanark, the market where most of the designated ewe lambs for breeding were sold (Table 17).

#### Movement from Markets

All the Greyface ewe lambs for breeding, designated or not, would have been purchased either by farmers who would eventually use them as replacements or by farmers who would sell them again as ewe hoggs or gimmers. On the assumption that about 20,000 were bought, it would appear that about half were kept as replacements and half were sold as ewe hoggs or gimmers. This division is based on what is known about buying and selling practices and from the marketing of ewe hoggs and gimmers. It is known that, unlike the ewe lambs, ewe hoggs and gimmer replacements are almost all sold as such rather than indiscriminately along with feeding sheep. Moreover, the figures for marketed Greyface ewe hoggs (1,500) and gimmers (10,300) can be taken to represent the ewe lambs which were bought by farmers for re-sale rather than for replacements. This can be done because it is very uncommon for breeders of Greyface lambs to keep them over the winter and sell them for the first time as ewe hoggs or gimmers. Hence, it can be seen that about 10,000 or half of the estimated 20,000 ewe lambs were re-marketed and

the other half were withdrawn as replacements at the ewe lamb stage. Furthermore, as will be more fully discussed later, most of those re-marketed are kept from the ewe lamb until the gimmer stage.

These two movements, movements for eventual use as replacements and for re-sale, could not be traced in detail because most were not designated as ewe lambs for breeding. It can be said, however, that most of the distribution was of a local nature. In the case of the movement of ewe lambs to farms for replacements this would involve a transfer from regular upland flocks of Blackface ewes via markets to regular lowland flocks of Greyface ewes. For example, Greyface ewe lambs from the uplands of central Aberdeenshire were moved through Huntly, Aboyne and Kittybrewster markets to lowland areas of eastern Aberdeenshire where Greyface regular flocks requiring replacements are concentrated. Similarly, Greyface ewe lambs were moved from the Ochils, Sidlaws and Campsies and eastern Grampians through Perth and Stirling markets to the East-Central lowlands. The ewe lambs for later re-sale are distributed in a similar manner to farms adjacent to the areas where they were bred and marketed. However, a higher proportion of them go to upland farms than in the case of the ones to be kept for replacements.

Although the movements of Greyface ewe lambs within Scotland are mainly of a local nature, there are some quite long-distance transfers from Scotland to England. It is true that most of the movement to England, too, is local in the sense that the ewe lambs are transferred short distances from Hawick, Lockerbie, Lanark and Castle Douglas markets to farms in Cumberland and Northumberland. But a proportion of the ewe lambs from these markets is moved as far south as Essex, Huntingdon and Wiltshire (Tables 17 and 25).

Regarding the movement to England, it should be noted here that



although some Greyface ewe lambs, ewe hoggs, gimmers and ewes go there, the movement is relatively unimportant in both countries. This does not appear to be the case regarding ewe lambs, of which about 1,000 or 25 per cent of the total recorded, went to England (Table 10). But there were probably 20,000 ewe lambs marketed in total and it is known that very few of the extra 15,000 went to England. Hence the proportion actually going there would be only about 5 per cent. Within England, the 'Scotch' Greyface ewe, as it is known there, is overshadowed by the English Greyface and the Mashum ewe for use on semi-arable and grassland farms (p. 101). In consequence, there is little demand in England for 'Scotch' Greyface replacements. The reasons for the lack of popularity of the Scottish Greyface require some elaboration because this is certainly not the case concerning the white-faced counterpart of the Greyface, the Scottish Half-Bred. One reason for the lack of popularity, is that supplies of English Greyface and Mashum replacements are available in large numbers in north England. These are produced on upland farms by crossing Swaledale ewes with Blue-headed Leicester rams to produce the English Greyface or Mule or with Teeswater or Wensleydale rams to give the Mashum. It is because ewes of the Swaledale breed are used in upland crossing flocks that there is little demand for Scottish Blackface breeding replacements and it is because ewe lambs from these same ewes, when crossed, are available in large numbers that the Greyface from Scotland is not in great demand. A second reason for the lack of popularity concerns the appearance of Greyface as opposed to the Half-Bred replacements from Scotland. The Half-Bred ewe for producing Down-Cross lambs has been popular in England for many years partially because these ewes, the product of Cheviot ewes and Border Leicester rams, are of a uniform type. That is, the

Half-Breds resemble one another or breed 'true to type' as it were, and can be identified easily for what they are. This along with the fact that there are not English breeds of the same general type means that English buyers have no difficulty in recognizing the Scottish Half-Bred. This is important because the English buyer at Scottish markets is often not as familiar with the Scottish breeds and crosses as he might be. Hence, he would rather buy those which are distinct from English breeds and are easily identifiable. It has already been mentioned that the Scottish Greyface resembles several North of England crosses and because supplies of the latter are available, demand for the former is reduced. But, in addition to this, the English buyer is discouraged from purchasing the Scottish Greyface because they, unlike the Scottish Half-Bred, are not uniform or true to type. Rather, due to the segregation of hereditary characters,<sup>6</sup> some tend to resemble their mothers (Blackface breed) and others their fathers (Border Leicester breed). Hence, the English buyer is often not able to identify Greyface lambs for what they are and because of this may be chary of purchasing them. This applies to some Scottish buyers too, but most of them can identify all the Scottish breeds with little difficulty.

#### Greyface Ewe Hogs

About half or 10,000 of the Greyface ewe lambs sold are remarketed as ewe hogs or gimmers (p. 131). On the assumption that most of the ewe hogs were sold as ewe hogs rather than under the general heading of 'hogs', the estimated 1,500 of these do, in fact, represent the total numbers marketed (Table 7). Allowing that about 500 of these were being sold by the breeders, only about 1,000 or 10 per cent of

those bought for re-sale were marketed again at the ewe hogg stage. This is a much lower proportion than the Blackface breed for which about a third of the ewe lambs for re-sale were sold again as ewe hogs (pp. 104 and 109).

The proportion of Greyface ewe lambs for re-sale marketed at the ewe hogg stage is low for several reasons. First, a large proportion of them are bought by farmers whose main enterprise is beef cattle breeding, rearing and/or feeding. On these farms, a subsidiary sheep enterprise such as ewe lambs for re-sale is often complementary to the cattle throughout the year (pp. 111-112). Hence the ewe lambs can be kept to the gimmer stage before re-sale. This factor contrasts with Blackface ewe lambs, most of which went to dairy farms and were sold as ewe hogs in the spring. Another reason, related to the first, is that some farmers who buy Greyface ewe lambs tup them at the ewe lamb stage, keep them over the summer to raise their lambs and sell them as 'gimmer had lambs' in the autumn. In a sense, then, these farmers are running flying flocks of ewe lambs for sale as gimmers. This is a recent practice, having been developed in the past 25 years, and consequently little information on it is available. However, it is known that about 75,000 ewe lambs have been put to the ram annually in recent years<sup>7</sup> and that a considerable proportion are in flocks of this type. It is not known, however, what number of Greyface ewe lambs are handled in this way because the 75,000 also includes other breeds, in particular Cheviot and Half-Bred ewe lambs. However, for whichever breed, the practice is convenient to both sellers and buyers. The sellers of 'gimmers had lambs' benefit from the extra income derived from the lambs. Moreover, they often receive a higher price for the 'gimmers had lambs' than other farmers receive from virgin gimmers. This price differential

arises because it is common for difficulties to be experienced with first lambings especially when the ewe is crossed with a ram of a larger breed. Hence, farmers with crossing flocks of Greyface ewes mated with Down rams are often willing to pay more for gimmer replacements which have already borne a lamb. Moreover, the premium paid for such gimmers is usually more than repaid by the benefits. This is readily apparent when one considers that it is not uncommon for 10 to 15 per cent of the hitherto virgin gimmers to lose their first lambs or fail to conceive and, in addition, perhaps another 10 per cent bear poor lambs. A third reason for the tendency to re-sell purchased Greyface ewe lambs at the gimmer rather than the ewe hogg stage involves an understanding of the management and stocking of Greyface flocks. Generally speaking, regular flocks of Greyface ewes are maintained on lowland farms of a relatively intensive nature. Amongst many ways, intensification is expressed by keeping only productive sheep on the farm. Thus, the farmer stocks all the grassland available for sheep to capacity with productive ewes and gimmers and buys in gimmer, rather than ewe lamb or ewe hogg replacements. Of course, if the farmer has rough grazings or poorer types of improved grass which are not suitable for productive sheep he may use them for ewe lambs or ewe hoggs. However, grazings of this type are not commonly associated with farms where regular Greyface flocks are maintained and, even where they are, they may be used for beef or dairy cattle. On the other hand, it is mainly because grazings of this type are commonly associated with farms where regular Blackface crossing flocks are maintained that a much higher proportion of the replacements for them are purchased as ewe hoggs.

For these reasons, then, the number of Greyface ewe hoggs marketed

is low in comparison with ewe lambs and gimmers. Only 1,500 were sold during 1966, of which about 500 were sold by the breeder and 1,000 by farmers who bought them as ewe lambs, and these came from farms scattered over an extensive area covering parts of each region; hence no 'important supply areas' could be delineated. The distribution, too, needs little comment except that it, too, was widespread and that some of the ewe hoggs would be kept as replacements and others would be sold again as gimmers. In addition, there is one more important feature of the distribution which should be noted and this involves the transfer of ewe hoggs from Aberdeenshire to Edinburgh markets. As shown in Table 17, about 200 ewe hoggs were bought by Scottish dealers at Aboyne and Kittybrewster markets in Aberdeenshire. These, together with perhaps another 200 to 300 ewe hoggs bought by the same or other Aberdeenshire dealers as ewe lambs and kept over the winter by them, were moved south and sold at the three Edinburgh markets from whence they were distributed to farms in the South-East Region. Hence, the figures given in Tables 6 and 7 are somewhat misleading in that the ewe hoggs sold in the South-East Region originated in Aberdeenshire. Moreover, about 200 of them were sold as ewe hoggs in Aberdeenshire markets and Edinburgh markets, so that they have been double counted, that is, the total throughput of ewe hoggs, although totalling 1,500, represents only 1,300 separate sheep. It should be noted that, although the numbers in this transfer are small, it does illustrate the usefulness of dealers in matching surplus supplies to local demands in one area with surplus demands to local supplies in another. Moreover, it is the first example of how the Edinburgh markets act as dealers' markets. Indeed, as will be more fully discussed later, most of the store sheep supplied to the three Edinburgh markets are derived not from local



farmers but from dealers who gather them from all parts of Scotland.

### Greyface Gimmers

Much of what need be said regarding the supply, demand and movement of gimmers has been already discussed in some detail and can be summarized as follows:

1. About one half of the 20,000 Greyface ewe lambs marketed were bought as replacements and the other half were bought for later re-sale.
2. Only a small proportion of the ewe lambs bought for re-sale were sold as ewe hoggs. These, together with ewe hoggs from breeders' farms, totalled about 1,300.
3. Most of the ewe lambs for re-sale were kept and sold as gimmer replacements. These together with a few bought as ewe hoggs and an even smaller number from breeders' farms, totalled 10,300 during 1966 (Table 7).

### Supply and Markets

Maps 14 and 23 and Tables 6 and 18 show that most of the Greyface gimmers marketed during 1966 came from the South-West, East-Central Regions and from Aberdeenshire. The South-West Region accounted for about half the 10,300 and most of these were sold by farmers who previously bought them as designated ewe lambs from breeders in the same region. However, the origin of those sold in the other regions is a more difficult one to trace, because most of them were sold as undesignated ewe lambs. On the basis of what is known, however, it would appear that most of the gimmers sold in the North-West, East-Central and South-East Regions originated in the North-East Region (Aberdeenshire) and were distributed to this and to the other regions

at the ewe lamb and ewe hogg stage.

A total of 22 markets in 18 centres in these areas sold some gimmers during 1966. Supplies were all drawn from local farmers and, because the distributions of ewe lambs and ewe hogs for re-sale were extensive, individual market throughputs were small. Kittybrewster in Aberdeenshire and Lanark and Ayr in the South-West Region were the largest markets, with throughputs of about 2,000, whilst most of the other markets handled less than 500 each.

#### Movement from Market

For the same reasons as for ewe lambs and ewe hogs, very few Greyface gimmers were moved to England. The 500 that did go there were bought in the South-East Region by English dealers and farmers and distributed to Cumberland (45), Northumberland (155), Durham (25), Kent (50) and Essex (154) (Tables 14 and 18). Although the numbers involved in this movement are small it illustrates an important feature of marketing and movement of store sheep from Scotland to England; namely that the eastern Border markets are important sources of breeding replacements for farmers throughout the eastern half of England. This will become more apparent later when the movements of Cheviot and particularly Half-Bred breeding sheep are discussed.

The distribution of gimmers within Scotland requires little explanation. They were all bought for immediate use as replacements (i.e. within a month or two) in regular crossing flocks of Greyface ewes to produce Down-Cross lambs. But, although the overall distribution of gimmers resembles the distribution of these flocks it is not identical with it because a proportion of the replacements were bought as ewe lambs and ewe hogs or were home-bred (compare Maps 8 and 23).

On a more detailed scale, too, the distribution is what might be expected. Markets in each region gather supplies from local farmers and distribute them to farmers within the same general area. In some cases, for example, the distributions from Kittybrewster to Angus, Perth and Fife and from Lanark to the same counties and to Midlothian and Peebles, the lines of movement extend across regional boundaries but the distances are not great and most of them can be thought of as local transfers. There is, however, an important non-local movement from Kittybrewster to Selkirk, Roxburgh and Berwick. This is surprising in view of the fact that gimmers from these same Border counties are moved south to England. It arises because farmers in the eastern Borders often prefer breeding replacements from the north of Scotland to those locally bred. They do so because they feel that the northern gimmers are hardier and have better mothering qualities than those bred locally. Moreover, it is for similar reasons that some English farmers prefer the Scottish Border product to similar types (Mule or Mashum) produced locally. This ability of sheep to 'do' well when moved from one area to another is not fully understood, but it seems to arise because of the transfer from harsher to kindlier conditions, which involves contrasting climates, soils, vegetations, feeds available or a combination of them. For whatever reason they arise, the benefits are real and well-known to farmers. Indeed, farmers use the term 'shifting ability' to express them and they are known to arise when sheep are moved between particular areas. Furthermore, as will be discussed later, the ability to shift well is an important factor in the movement of feeding sheep as well as breeding sheep and also for all types of store cattle.

Greyface EwesSupply and Markets

Some 10,400 Greyface ewes were sold at Scottish markets during 1966, of which 90% or 9,300 were recorded (Table 6). These ewes would have been bred for three or four years in regular flocks previous to being removed and sold as cast ewes for further breeding elsewhere (compare Maps 8 and 18). Because of this, the regional output of cast ewes can be taken as a guide to the relative importance of regular Greyface flocks in the different areas. On this basis, it would appear that about 60 to 65 per cent of the regular Greyface flocks in Scotland are in the South-West and South-East Regions and the rest or 35 to 40 per cent are in the East-Central and North-East Regions. This, however, is only a rough estimate because a proportion of the cast ewes are fed rather than bred. Moreover, a large proportion of those fed and also some of those for further breeding do not enter the store markets but rather are fed or bred on the farms where they were used in regular flocks. However, assuming that the proportion handled in these other ways does not vary regionally to a significant degree, the percentage distributions given above can be taken to be reasonably accurate.

Within the main supply area, that is, within the areas of regular Greyface flocks, markets draw their supplies of cast ewes from a limited number of local farms and hence there are numerous markets with small individual throughputs (Map 14 and Table 19). For example, Huntly, Turriff and Kittybrewster markets share parts of the same regular Greyface flock area of central-west Aberdeenshire and the two Stirling markets, Lanark, Biggar and Peebles markets draw supplies

from the same general area, i.e. the east-central lowlands.

#### Movement from Markets

All of the Greyface cast ewes for breeding were distributed to farms where they would be bred for one to two years in flying flocks. Generally speaking they were moved to farms within the same general area where they were used previously in regular flocks (Map 23). Sometimes this involved a movement to farms where the breeding life of the ewe could be prolonged with better feed and a milder climate. But often the movement was between farms on which environmental conditions differed little. In this case, movement occurs because the regular flock breeder casts his ewes at a certain age regardless of their condition. Many farmers with regular flocks pursue this policy because it is more convenient in the sense that the older ewes do not have to be carefully looked over and separated if they are all cast at the same age. Moreover, in the long term this policy results in a higher quality of breeding flock because even if only the better older ewes were kept, some of them would not produce as many or as good lambs as the younger ewes. In other words, to maintain the required intensity of output, it is more efficient to sell all the older ewes at one time even though some of them might still produce well. On the other hand, the breeder with flying flocks of these ewes often keeps them as a sideline so is not so concerned with high intensity of production. Furthermore, he usually does not keep a large flock and so often has more time to cater to the ewes on a more individual basis than could a regular breeder with a larger flock. This factor is very important regarding the older ewes which will often produce well but need careful individual attention to do so.



Movement to England of cast Greyface ewes is on a limited scale, as it was for the younger Greyface breeding sheep. The 1,000 ewes which do go south are sold at Lanark, Hawick and Reston markets and are distributed mainly within north England (Tables 10, 19 and 25).

#### Cheviot and Half-Bred Breeding Sheep

Movement of breeding sheep within the 'white faced' integrated and stratified stream arises for the same basic reasons as that within the 'black faced' stream. Thus, in a similar manner as described on page 89 upland crossing flocks of Cheviot ewes are replaced by Cheviot gimmers and cast ewes from the pure hill flocks and the upland flocks, in turn, provide Half-Bred gimmer replacements for regular lowland crossing flocks. Finally, cast Half-Bred ewes and a limited number of Down-Cross breeding sheep move within the lowland areas to replace flying and regular flocks. The movement of young breeding sheep is similar, too, in that some of the ewe lambs and ewe hoggs are bought for eventual use as gimmer replacements but others are bought for re-sale as ewe hoggs or gimmers.

Although the movements of the Cheviot & Half-Bred replacements arise for similar reasons and move between flocks of the same general types as the Blackface - Greyface replacements, the patterns of supply, demand and movement, are quite different for each. The basic reason for these differences is that each stream has its areas of dominance and in places the two are mutually exclusive. These distributions and the reasons for them have already been discussed in detail in Chapter I where it was shown that the foundation flocks of the 'white-faced' stream, the pure-bred Cheviot flocks, predominate on the drier and usually grassier hills of the north and south-east whilst Blackface pure bred flocks

predominate on the wetter and usually more heathery hills elsewhere. Thus, at the outset, the main supply areas for upland crossing flock replacements are differently distributed. In consequence, even if replacements of each breed move to the same general area, the lines of movement connecting the supply to the demand areas will differ. For example, although both Blackface and Cheviot replacements move to Aberdeenshire, the former are transferred there from the South-West Region as ewe lambs or ewe hogs, whilst the latter are moved south from Caithness and Sutherland as ewe lambs and are kept by farmers in Aberdeenshire for sale later at local markets as ewe hogs and gimmers. Moreover, the above difference is but one of the many which could be cited for the movement of pure-bred replacements and there are many more for the equivalent within each stream at the first- and second-cross replacements stages. There are other differences arising from the basic one of distribution, such as the fact that a much higher proportion of the 'white faced' replacements are moved by dealers and a much higher proportion go south of the Border to England. An examination of all these differences, along with other important features of the movements of each breed and stage within the Cheviot - Half-Bred stream, will form the core of the discussion which follows.

#### Cheviot Ewe Lambs, Ewe Hogs, Gimmers

As with the Blackface breed, it is at the gimmer stage that most Cheviot replacements enter regular crossing flocks for breeding. Similarly too, these replacements come originally from pure-bred hill flocks but are moved off the hill farms at the ewe lamb stage and undergo subsequent transfers at the ewe hogg and finally at the gimmer stage. Moreover, at the ewe lamb and ewe hogg stages some are bought

by farmers who later use them as gimmer replacements and some are bought by farmers who later sell them as ewe hoggs or gimmers.

During 1966, the estimated total numbers of Cheviot breeding sheep marketed were: ewe lambs, 30,100; ewe hoggs, 3,600; and gimmers, 11,600 (Table 7). On the assumption that, as with the Blackface breed, the successive stages were marketed in a chronological age sequence (see pp. 78 and 79) and that the proportion marketed at each stage remained approximately the same from year to year, it can be seen that only about 10 per cent of the ewe lambs are sold again as ewe hoggs and about 33 per cent as gimmers. This, too, requires qualifications, namely that (a) some of the ewe hoggs or gimmers come from farms where they were bred, that is, they do not all come from farms where they were bought as ewe lambs for re-sale as ewe hoggs or gimmers and (b) at each stage a small but not unimportant number is moved to England and some of these, too, would have been marketed there as ewe hoggs or gimmers (Tables 7 and 10). However, these two factors tend to cancel out in the proportions for the entire movement so it can be said that approximately two thirds of the ewe lambs go to farms where they are kept for later use as gimmer replacements and one third are bought for re-sale, mainly at the gimmer stage. These overall proportions are not markedly different from the Blackface breed excepting that most of the Blackface, but few of the Cheviot ewe lambs bought for re-sale are marketed at both the ewe hogg and the gimmer stage (Table 7 and pp. 109, 116-117). The reasons for this will become apparent in the discussion of movement by stage, beginning with the primary or ewe lamb stage.

Cheviot Ewe LambsSupply

Some of the 30,100 Cheviot ewe lambs for breeding marketed during 1966 came from partly cross- partly pure-bred flocks but most, probably over 90 per cent, came from pure-bred flocks. In either case, the ewe lambs marketed were surplus to the replacement requirements of the breeders' flocks and would eventually be used as gimmer replacements in regular crossing flocks to produce Half-Bred, or less commonly, Down-Cross lambs.

In view of the fact that the numbers of ewes and gimmers of the Blackface breed on which hill subsidy was paid outnumber those of the Cheviot breed by about 5 to 1 and that it is from these flocks that most of the surplus ewe lambs of each breed come, it is surprising that the ratio of Blackface to Cheviot ewe lambs for breeding was only 1.3 to 1. In other words, a much higher number of surplus ewe lambs for sale as replacements come from Cheviot than Blackface flocks in proportion to the number of pure or mainly pure-bred flocks maintained. The explanation of this difference involves many factors including a consideration of pure-bred flocks on which the hill subsidy is not paid, variations in lambing and replacement rates and differences in demand for replacements of each breed.

About 1.6 of the 1.9 million Blackface ewes on which hill subsidy is paid are in pure-bred flocks and the remainder are in partially or wholly crossed flocks (p. 120). On the other hand, almost all of the 0.4 million Cheviot ewes on which hill subsidy is paid are in pure-bred flocks and, moreover, these do not represent all the pure-bred Cheviot flocks. There are, in addition, an unknown but considerable number of

Cheviot pure-bred flocks which do not receive the hill sheep subsidy. These flocks comprise North Country Cheviot ewes and are found on the uplands of Caithness, Berwick, Roxburgh and Dumfries, adjacent to the areas where subsidized South Country or North Country Cheviot flocks are maintained. In addition, on the same general upland areas, there are a considerable number of partially crossed, partially pure-bred North Country Cheviot flocks which, although not receiving the hill subsidy, produce some surplus Cheviot ewe lambs for sale. Hence, unlike the Blackface breed, a significant number of Cheviot ewe lambs entering the store movement come from ewes on which hill subsidy is not paid and these account for part of the unexpectedly high number of Cheviot ewe lambs marketed.

The effect of lambing rates on the output of surplus ewe lambs has been discussed in some detail for the Blackface breed (pp. 91-93) and much of what was said there applies also to the Cheviot breed. In summary, wherever lambing rates are above about 70 per cent there will be surplus ewe lambs over and above the 30 or 35 per 100 ewes required for flock replacements. Unfortunately, lambing rates are not published in such detail or as regularly for the Cheviot as for the Blackface breed. However, from various sources, including interviews and various publications, it is known that the normal lambing rates in different areas are, for the main types of Cheviots, as follows:

1. North Country Cheviots on which hill subsidy is paid, in Caithness, Sutherland and parts of Ross - 80 to 90 per cent.
2. North Country Cheviots in upland flocks (park flocks) in Caithness, the eastern Borders, Dumfries and parts of Kirkcudbright - 100 to 110 per cent.



3. South Country Cheviots in hill flocks in the eastern Southern Uplands - 85 to 95 per cent.
4. South Country and mixed South Country - North Country hill and upland flocks on the western mainland of Ross and Inverness and on Skye, most of which are crofters' flocks - 65 to 75 per cent.

Thus, unlike the Blackface breed (Table 5), there are ewe lambs surplus to those needed for flock replacements in almost every area where Cheviot flocks are kept. This also contributes to the high proportionate number of Cheviot ewe lambs sold to total ewes. On the other hand, the surplus for sale for breeding is not as high as the lambing percentages might suggest. Indeed, very few ewe lambs for breeding emanate from South Country Cheviot flocks which, in total, account for about 0.2 million, or half the Cheviot ewes on which hill subsidy is paid. This is understandable with regard to the South Country Cheviots in the north-west mainland - Skye area because lambing rates are low, but this does not apply to those on the Southern Uplands. There, and also on some crofts or farms in the north-west area where small surpluses do occur, most of the South Country Cheviot ewe lambs are sold for feeding rather than breeding. This is done because most farmers with regular crossing flocks prefer the North Country Cheviot type because, when crossed, it produces larger Half-Bred lambs. This is important to the farmer particularly because he, in turn, receives a higher price for a Half-Bred ewe lamb out of a North Country ewe than he would for a smaller Half-Bred ewe lamb out of a South Country ewe. Therefore, although higher lambing rates do provide a large number of surplus Cheviot ewe lambs, it is usually only those from North Country Cheviot ewes which are sold for breeding.

In summary, then, it is quite probable that the proportional

advantage of the Cheviot flocks on which hill subsidy is paid over their Blackface counterparts derived from higher lambing percentages is offset by the fact that few of the South Country Cheviot ewe lambs are used for breeding. Hence, it would appear that the main reason for the unexpectedly high number of surplus ewe lambs for breeding is that a considerable number of Cheviot flocks producing them do not receive hill sheep subsidy.

The regional output of supplies will be considered now. During 1966 two thirds of the 30,100 Cheviot ewe lambs for breeding came from north Scotland and one third from south Scotland (Table 6 and Map 14). Supplies in the north were almost wholly of the North Country type drawn from Caithness, Sutherland and Ross (Map 26). In the south, too, North Country Cheviots formed the bulk of the supply but an important proportion, probably about one third, were South Country Cheviots. This may appear to contradict what has been noted previously regarding the demand for each type and hence requires some explanation. First, it should be noted that in south Scotland almost all the Cheviots on which hill subsidy is paid, or about 1.6 million (Table 3), are South Country Cheviots and that these are known to outnumber pure-bred North Country Cheviots by a ratio of at least two to one. Hence, with lambing rates of 85 to 95 per cent, it can be seen that only a small percentage of the surplus South Country Cheviot ewe lambs were sold for breeding. Furthermore, it should be noted that the South Country Cheviots in western Roxburgh and Dumfriesshire tend to be larger and more suitable for crossing than South Country Cheviots of the eastern Borders and the north west. Indeed, in the days before the development of the North and South Country Cheviots as separate types the larger Cheviots of Dumfriesshire were specially designated as 'Lockerbie' Cheviots to differentiate them from the eastern Border Cheviots.<sup>8</sup> Furthermore, it

was one of these Lockerbie Cheviot tups that was taken to the north of Scotland and was partially responsible for the evolution of the larger North Country Cheviot type there.<sup>9</sup> By way of further explanation it can also be said, but not verified quantitatively, that in recent years there has been a trend in favour of the smaller types of Cheviot ewe lambs. This trend has arisen because of the public demand for smaller, leaner lambs and has been expressed throughout the entire integrated chain of breeding sheep. Thus, the need to reduce the size and weight of Down-Cross lambs has led to a demand for smaller and lighter Half-Bred ewes. This, in turn, has given rise to a growing preference for smaller and lighter Cheviot ewes and, ultimately, for smaller and lighter Cheviot ewe lamb replacements. This general trend has been evident for many years and was responsible in the last century and the early parts of this one for the decline of the wether system and the replacement of Half-Bred x Half-Bred and Half-Bred x Leicester flocks by Down-Cross x Half-Bred flocks (pp. 13-14). And, from 1945 to 1960 it was expressed by the decline of Oxford Down rams in favour of the lighter Suffolk Down ram for crossing with the Half-Bred or Greyface ewe. Finally, in the last five years it has led to the growing preference for lighter Cheviot and Half-Bred ewes and hence ewe lamb replacements.

In Scotland as a whole this trend has been expressed by a growing tendency to cross Cheviot ewes directly with a Suffolk Down ram and also by using a Greyface rather than a Half-Bred ewe if the middle stage is retained. Besides this trend, there has been a growing demand in south Scotland for South Country Cheviot ewe lambs and in north Scotland for the smaller hill-type North Country Cheviot ewe lamb as opposed to the larger park-type North Country Cheviot ewe lamb for use as replacements in crossing flocks. It should be noted, however, that these trends are,

as it were, currently in the incipient stage and more time is required to tell whether they will continue to develop.

### Markets

In view of this discussion it would be useful if the quantitative data on Cheviot ewe lamb movement were available by type (North and South Country) and sub-type (park and hill-type North Country Cheviot). Unfortunately, this is generally not the case; hence non-quantitative data, mainly gathered by interview with auctioneers, has had to be the main source of information. This limitation is not as serious as it might be, however, because as yet most of the ewe lambs are of the North Country type and in any case most of them, regardless of type, are moved to similar types of farms within the same general area. In other words, the same general factors govern the marketing and movement of all types of Cheviot ewe lambs moved for breeding. A more serious limitation, however, is that although 88 per cent of the total ewe lambs marketed during 1966 were traced, only 52 per cent were recorded for the South-West Region (Table 7). Furthermore, those not recorded were concentrated in one county, Dumfriesshire (Map 15). This is unfortunate particularly in view of the fact that the ewe lambs in this county are of a somewhat different type than elsewhere (p. 149) and probably exhibit different patterns of movement. Elsewhere, however, the coverage was only 90 per cent; indeed, if the estimated totals were correct only 500 ewe lambs at 2 markets were not recorded outwith the county of Dumfriesshire (Table 14 and Map 15).

Most of the supplies in north Scotland were North Country Cheviots from Ross, Sutherland and Caithness, but there were also some sold in Orkney and Aberdeenshire, giving a total of 20,000. These were sold

at 17 markets in 14 separate counties (Table 14). As shown on Map 15, supplies were concentrated at five main centres, Rogart, Lairg and Dingwall in Sutherland and Thurso and Wick in Caithness. In south Scotland, 9 markets in 7 counties accounted for a throughput of about 10,000 Cheviot ewe lambs (Table 14). The three Edinburgh markets, Swan's, Bosomworth's and Oliver's, are all dealers' markets, that is, their supplies of Cheviots come not from farmers but from dealers (see also pp. 137-138). As will be more fully discussed in the succeeding section, these markets are, and for many years have been, supplied with North Country Cheviots bought by dealers in north Scotland and moved south by them. Other markets in south Scotland, in particular Annan and Reston, receive some in this way but the dealers' ewe lambs are much less important in proportion to locally produced ones. Supplies at these and the other southern markets, excepting the Edinburgh ones, are drawn from local hills and uplands and consist of North and South Country Cheviots in a ratio of about 2 to 1.

#### Distribution and Movement

On the basis of the marketing figures collected, it would appear that about two thirds of the 30,100 ewe lambs were distributed to farms where they were kept for use as replacements and one third were distributed to farms for storing and re-sale as ewe hogs or gimmers (Table 7). It should be noted again that it was not possible to identify and map the distributions to these two types of farm separately (p. 80).

Viewed broadly, the distribution to both types of farms took the form of a southward movement from both producing areas. This southward movement was particularly noticeable in respect of distribution from



north Scotland (Tables 8 - 10 and Map 24). Indeed, only 4,000 of the 20,000 Cheviot ewe lambs marketed in the far north stayed there. The others were distributed to farms in Nairn, Banff, Moray, Aberdeen and Kincardine (7,000), Angus, Perth and Fife (800), the Lothians Selkirk, Roxburgh and Berwick (1,200), Kirkcudbright and Dumfries (2,000) and England (1,000). The other 4,000 were bought and moved by dealers and could not be traced precisely but it is known that about 2,000 of these were supplied to and distributed by Annan market, another 1,000 were sold at private sales at Reston and Berwick (Northumberland) markets and the others were probably sold by the dealers directly to farms in south Scotland. Movement from the producing area in south Scotland is of a more local nature involving a transfer from the hills and uplands farms to nearby upland and lowland farms (Map 24) but here, too, a significant proportion (13 per cent) were moved south, in this case to England (Tables 7, 10, 14, 26).

One of the most significant features of these movements, and one which contrasts with the movement of Blackface breeding sheep, is the importance of dealers. During 1966 they moved 5,000 Cheviot ewe lambs or one sixth of the total; moreover, these were all bought in north Scotland and accounted for one quarter of the total moved from there. To understand the reasons for the importance of dealers in distributing Cheviot ewe lambs from north Scotland, it is necessary to examine the origin and development of connections between the southern and northern Cheviot and Half Bred areas. It was shown in Chapter I (pp. 24-25) that over a century after Cheviots from south Scotland had been introduced to north Scotland, or from 1800 until 1920, the two areas developed more or less independently as far as breeding was concerned. Then, an outbreak of scrapie in south Scotland led farmers there to replace

their Cheviots, known by that time as South Country Cheviots, by Cheviots from north Scotland, that is, by North Country Cheviots.<sup>10</sup> The disease was soon checked by these measures and South Country types once more came into favour on the hills. However, North Country flocks remained on the uplands and at first these were all or almost all crossed to produce Half-Bred lambs. This set up a demand for North Country Cheviot replacements which had to be obtained from north Scotland,<sup>11</sup> and connections were soon established between the two areas<sup>12</sup> with respect to Cheviot breeding sheep, most of which were sent south by dealers to the Edinburgh and other southern markets. This pattern was the same as that which had been previously established between the north and south Scotland with respect to the movement of Cheviot sheep for feeding. As will be more fully discussed in the following chapter, this trade developed during the 19th century and involved the transfer of Cheviot lambs, hogs and wethers south by rail and sea.<sup>13</sup> Few farmers went north to buy themselves, but rather depended on dealers who bought at northern markets and sold at southern ones. It was during this earlier period that the three Edinburgh markets established their dealers' trade in sheep and this infrastructure naturally formed the basis for the transfer of breeding sheep to the south. Moreover, it has remained much the same to the present day, although in recent years the private motor car, the general change in attitudes towards long distance travel and the chance to combine a trip north with a holiday, have all led to an increase in the number of farmers from south Scotland who go north to buy sheep themselves. Notwithstanding this trend, dealers are still very important in the movement of ewe lambs from north to south Scotland; indeed, during 1966, they accounted for about half the 8,000 transferred (p. 153).

This discussion has been concerned only with the movement and distribution of ewe lambs within Scotland. Movement from north Scotland to England is similar to, and can be thought of an extension of, the movement to south Scotland. Thus dealers, and less importantly farmers, buy North Country Cheviot ewe lambs at markets in north Scotland and distribute them in England. These, together with North and some South Country ewe lambs bought by English farmers themselves at markets in south Scotland, would have been used eventually as replacements for crossing flocks. They were not traced beyond the ewe lamb stage but it is known that most of them stayed within north England, particularly in Cumberland and Northumberland where Cheviot and Half-Bred flocks are quite common.

Before beginning a discussion of Cheviot ewe hoggs and gimmers, it is appropriate to discuss here a factor which has affected the total movement of all types of Cheviot breeding sheep. Excepting for the first World War and for several years after it, there was in Scotland, and in Great Britain as a whole, an increase in the acreage of improved (permanent and rotation) grass at the expense of tillage, during the period from 1870 until the late 1930s.<sup>14</sup> This had important consequences for the sheep industry in Britain, the most important of which, as far as breeding flocks were concerned, were (a) the replacement of pure-bred Down breeds in arable areas by grassland and semi-arable cross breeds, (b) a general expansion of lowland and upland breeding flocks. The first of these consequences took place mainly in the arable areas of England. There, under the former system, pure-bred sheep such as the Oxford, Hampshire and Suffolk Downs and the Lincoln, Leicester and Cotswold Longwools were maintained throughout the year on the arable land, consuming foggage and corn stubbles in the autumn

and being hurdled from place to place on the turnip fields during the winter and spring. In this way, the sheep consumed by-products of the arable system and deposited and trod in organic manure, the latter being very important especially on the lighter arable soils of eastern England. This system was profitable and popular up until the late 19th century but from that time onwards it declined as a consequence of the decline of intensive arable farming. The Down and Longwool breeds went out of favour because they had been bred and developed over the years especially for use on arable land but were not suited to the new combination of grass and arable. However, it was soon found that there were other British breeds which were suitable, namely the crosses between hill or upland and Down breeds which had been developed especially for semi-arable and grassland conditions in the Welsh-English and Scottish-English borderlands. Hence, there were soon large numbers of these, including the Welsh Half-Bred, the Clun Forest and the Kerry Hill from the Welsh border area and the Mashum, Mule and, above all, the Scotch Half-Bred from the northern Borderlands, being moved annually to southern and eastern England.<sup>15</sup> This demand and resulting high prices for semi-arable and grassland sheep made it desirable for farmers in these borderlands to produce or expand production of them. This was not only desirable but also was possible in Scotland because tillage was being laid down to grass in the arable areas of Scotland. Expansion took the form of increased production of Half-Bred replacements which were favoured above all the other breeds by breeders on arable land in southern and eastern England.<sup>16</sup> This expansion was at first confined to the South-East of Scotland but soon spread north to Aberdeen where previously sheep breeding had been of little importance (pp. 15 - 16). It was about the same time that farmers in south

Scotland discovered that the North Country Cheviot ewe was superior to the South Country ewe as a producer of Half-Bred ewe lambs (p. 25). Consequently there arose a demand in both southern Scotland and Aberdeenshire for North Country Cheviot replacements with which to increase the production of Half-Bred ewe lambs. This demand, in turn, led to high prices for Cheviot ewe lambs in the Ross-Sutherland-Caithness area and encouraged farmers there to expand production of them if possible and/or to improve the size and quality of the sheep they produced.

This same general system, involving high demands and high prices for Half-Bred and Cheviot ewe lambs, lasted until about 1960. Since then, however, lowland breeding sheep in general, and the Half-Bred ewe in particular, have gone out of favour (Table 1). The reasons for this are many, including lower gross margins per acre for sheep than for alternative enterprises,<sup>17</sup> a decrease in turnips,<sup>18</sup> increased specialisation and increased salaries necessary to maintain skilful shepherds.<sup>19</sup> This decline has been general throughout the arable and semi-arable areas of Great Britain; in Scotland alone, the number of lowland and upland ewes has declined from 1.53 million to 1.21 million in only 7 years (Table 1). The decrease in upland and lowland flocks has affected the Half-Bred breed particularly because, in addition to the general decrease in cross-bred flocks there has been a decrease in demand for the heavier types of crossing ewe of which the Half-Bred, being the largest and heaviest, has suffered most.<sup>20</sup> For all these reasons, then, demand for Half-Bred ewe lambs, particularly the larger and heavier types, has declined and, in consequence, prices have dropped (Table 29). Arising from this, crossing flocks of Cheviot ewes producing Half-Bred lambs have also declined and in consequence,



the demand and price paid for Cheviot ewe lamb replacements have dropped. Time did not permit this to be verified in detail but it is evident from the prices given in Table 29. Also, taking Lairg market as an example, it is known that in the last 10 years the number of Cheviot ewe lambs sold for breeding has been halved. Of course, the ewe lambs not sold for breeding are bought for feeding but the total income received is much lower than was previously obtained when all or almost all of them were sold for breeding (Table 29 - Cheviot ewe lambs for feeding usually receive slightly lower prices than Cheviot wether lambs).

It will be apparent from this discussion that, whenever one part of the integrated system is altered, all the other parts are also affected to some degree. For this reason it is difficult to know the best sequence in which to discuss the effects of any changes in the system. In this case, although the primary cause of change has been the decline of Half-Bred flocks, Cheviot flocks have also been affected. It was for this reason that it was considered more appropriate to give a full account of the entire process of change here.

#### Cheviot Ewe Hoggs and Gimmers

The vast majority of Cheviot ewe hoggs and gimmers marketed during 1966 were sold by farmers who had previously bought them as Cheviot ewe lambs. The numbers or proportions of Cheviot ewe lambs resold in this way as compared with retention by farmers for replacements vary regionally and require some explanation. The main feature requiring explanation is the striking contrast between south Scotland, where 4,500 of the 11,400 ewe lambs were resold as ewe hoggs and/or as gimmers, and central Scotland, where 8,300 of 12,100 ewe lambs were handled in this way (Table 7). Another feature requiring explanation is the small

proportion of these which were sold at the ewe hogg as compared with the gimmer stage. These differences are ones of degree rather than kind but they are significant because (a) areal variations in the proportion of ewe lambs resold leads to areal variations in the output or supply and hence movement of ewe hogs and gimmers, (b) the proportions of those resold which are marketed as ewe hogs or gimmers affects the relative importance of each type of movement and also affects the patterns of movement. An understanding of these features and their regional differences will require a discussion of many related factors including farm sizes and types, types of Cheviot crossing flock and relative location of each area.

In central and north Scotland, a large proportion of the farms with regular crossing flocks of Cheviot ewes, most of which are in the Moray Firth - Aberdeen area (Map 7), are arable or semi-arable stock rearing and/or feeding farms on the lowlands or semi-uplands. On these farms it is often the case that a farmer prefers to purchase his replacements as gimmers. The reasons for this are many, but basically it is due to the necessity to achieve as high an intensity as possible which, in this instance, means stocking the available grassland as heavily as possible with productive sheep. This is especially important in the Aberdeenshire area because the farms there tend to be smaller than elsewhere. Of course, by no means all the farmers in this area prefer to buy their replacements as gimmers but it is the most common method. Moreover, it has important consequences arising from the regional context in which it is done. First, it has contributed to the development of the practice whereby many farmers in central Scotland buy Cheviot ewe lambs in the far north and sell them as gimmers to these farmers. This practice is particularly common on

lowland and upland farms in Aberdeenshire. Indeed, these farms are often on similar types of land to those with regular crossing flocks but tend to be too small to maintain regular flocks. As an alternative they buy ewe lambs and sell gimmers. Commonly too, they tup the ewe lambs and sell them as "gimmers had lambs", a practice already mentioned in connection with the Greyface breed (pp. 50-52 and 135). Hence, it can be seen that, in the Aberdeenshire-Moray area at least, these practices are mutually beneficial to farmers with crossing flocks on the one hand and farmers without them (i.e. those that buy ewe lambs to sell as gimmers) on the other. Hence, it is not surprising that most of the ewe lambs moved to this area from the far north are sold again and that they are sold as gimmers rather than as ewe hoggs (Table 7 and Maps 15 and 25). Moreover, because this area is the most important north of the Forth-Clyde line as far as Cheviot replacements are concerned, it is to be expected that what is done there characterizes the overall pattern of marketing and movement. However, it is important to note that outwith the Aberdeen-Moray Firth area there are quite a different set of relationships. In the Easter Ross-Black Isle-Inverness area, most of the Cheviot ewe lambs bought from markets further north are resold at Inverness market as ewe hoggs. Indeed, Inverness market, with a throughput of 1,700 Cheviot ewe hoggs, was the largest single market in Scotland for them during 1966, accounting for about half the total (Table 15). This pattern of marketing arises because (a) few regular Cheviot crossing flocks are maintained in this area, hence most of those bought as ewe lambs are for re-sale, (b) the buying of ewe lambs to sell later is a profitable sideline on the smaller crofts and farms of the area whose main income is derived from cattle breeding and rearing, (c) the ewe lambs are sold as ewe hoggs

rather than gimmers because (i) the cattle require the summer pastures, (ii) the main centres for gimmers are in Aberdeenshire, so that few buyers would be attracted to Inverness and prices would probably be low. For these reasons, then, the ewe lambs are marketed as ewe hoggs and most of them go at that stage to the Aberdeen-Moray area for later sale as gimmers. For similar reasons, most of the ewe lambs kept within Caithness were remarketed at Thurso as ewe hoggs and moved south to the Aberdeen-Moray area for sale as gimmers. However, some of the ewe lambs were kept for local use and most of these were sold at the gimmer stage (Table 7 and Maps 15 and 25).

This necessarily detailed account of supplies and markets in north Scotland can be summarized in the following manner. Most of the ewe lamb replacements for Cheviot crossing flocks staying within north Scotland were bought for later re-sale as ewe hoggs or as gimmers. Most of these were moved south at the ewe lamb stage to the Aberdeenshire-Moray area and sold later as gimmers at Aberdeen markets, in particular at Kittybrewster. The others were moved to farms in Caithness and the Inverness-Black Isle area and most of these were sold at Thurso and Inverness markets as ewe hoggs. At this stage they were moved to the Aberdeen-Moray area to be sold, along with the ewe lambs moved earlier, as gimmers at Aberdeen markets.

A much higher proportion of the ewe lambs moved to farms in south Scotland, either from local markets or northern ones, were bought and kept for later use as gimmer replacements. One of the main reasons for this is that farms with regular Cheviot crossing flocks in south Scotland tend to be upland farms, often with a considerable acreage of improved land above 500 feet (Maps 4 and 10; p.42). This contrasts with north Scotland, particularly Aberdeenshire, where the upland areas

supporting crossing flocks of Blackface ewes and Cheviot crossing flocks tend to be confined to the semi-uplands and lowlands. The reasons for this difference would require a separate study in themselves. However, the probable reason is that the upland environment in south Scotland is kindlier and the improved land per farm greater, both of which favour the Cheviot breed. Moreover, comparing the types of farms in both areas on which Cheviot crossing flocks are maintained, it can be said that those in south Scotland, particularly in the south-east, are larger than those in north-east Scotland. Arising from these factors, all of which give the farms in south Scotland a more extensive nature than those in north-east Scotland, it is more common for farmers in the south to maintain non-productive breeding sheep. In particular, it is more common for Cheviot replacements to be purchased at the ewe lamb stage and kept for eventual breeding one year later as gimmers. This practice, together with the fact that lowland breeding flocks are more common in south Scotland and hence few farmers wish to buy ewe lambs to sell as ewe hogs or gimmers, explains why most of the ewe lambs moved within or to south Scotland are not resold at other later stages. Thus, whereas about half the Cheviot ewe lambs were distributed to farms in south Scotland, marketings of ewe hogs and gimmers were only 14 and 24 per cent of the Scottish totals respectively (Tables 6 and 7). The ewe hogs, totalling 473, were marketed at Lockerbie and Annan, and the gimmers, totalling 2,722, were marketed at these two centres and at Peebles, Hawick and St. Boswells (Map 15 and Table 15).

#### Movement from Markets

Much of what need be said regarding the distribution of ewe hogs has been covered in the previous discussion. To summarize briefly,



three quarters of the 3,600 ewe hoggs were sold at the three northern markets of Thurso, Inverness and Kittybrewster, and most of these were distributed to farms in the Aberdeen-Moray Firth area from which they were later sold as gimmers at Kittybrewster. The other quarter were sold at Lockerbie and Annan. Little is known regarding the distribution of these because the largest centre, Annan, was a non-cooperating market.

The distribution pattern for Cheviot gimmers is characterized by local and southward movements from each of the main producing areas. Specifically, gimmers from the Aberdeen markets are distributed locally, to south Scotland and to England, whilst those marketed in south Scotland are distributed locally and to England (Tables 7-10, 15, 26 and Map 25). In north Scotland, therefore, the movement of Cheviot replacements occurs in two main stages involving a southward shift in supply areas. Thus, the far north breeding area supplies ewe lambs and also ewe hoggs to the Aberdeen-Moray area and this area, in turn, becomes the main supply area for gimmers which are distributed locally and to south Scotland. This concept of stages could be said to apply to south Scotland, too, because it also receives ewe lambs from the north and in turn supplies gimmers to England. However, this parallel is not a close one because there is no southward shift of supply areas within south Scotland and, moreover, a much smaller proportion of the ewe lambs are resold as gimmers. This is not meant to imply that there is no shift in the supply areas in south Scotland. There is a shift but it is a local one; the hill and upland farms supply ewe lambs and some of these, in addition to some from north Scotland, are moved to upland and lowland farms which, in turn, supply the marketed gimmers.

Regardless of origin, all the gimmers were distributed to farms for

immediate use as replacements in Cheviot crossing flocks. Of the 11,600 moved, 85 per cent remained within Scotland and 15 per cent were sent to England. The distribution within Scotland is generally similar to the distribution of regular Cheviot crossing flocks. But it is not a guide to their relative importance in different areas because the proportion of total replacements bought as gimmers varies areally. Time did not permit a thorough examination of the distribution and relative importance of the Cheviot breed within England. Hence, little can be said regarding the movement of Cheviot gimmers excepting that they would be used as replacements in Cheviot crossing flocks and were distributed, as shown in Tables 10 and 26, over a wide area. It is known, however, that there are relatively few regular Cheviot crossing flocks in England and that the 4,600 replacements of all types from Scotland represent a large proportion of the total required.

### Cheviot Ewes

#### Supply and Markets

An estimated total of 55,100 Cheviot ewes for breeding passed through Scottish markets during 1966 (Tables 7, 16 and Map 15). Eighty per cent of these were recorded and most of the unrecorded ones passed through Annan and Thornhill markets in Dumfriesshire (Tables 6 and 16).

As with the Blackface ewes for breeding, these 55,100 represent only part of the total Cheviot ewes moved during 1966 because a proportion of them were sold for feeding rather than for breeding. The regional and total estimates for these two uses were:

Region	Number of Subsidized Hill Cheviot Ewes (000's)	Numbers Sold (000's)			
		For Feeding	For Breeding	Total	
North (	(Highlands	198	9	16.5	24.5
	(North-East	43	4	9	13
	East-Central	4	0.9	0.7	1.6
South (	(South-East	76	6	13	19
	(South-West	80	9	15.9	24.9
Scotland		401	28.9	55.1	84

Most of the Cheviot ewes for breeding or for feeding were from pure-bred flocks qualifying for hill subsidy although, as previously discussed, there are a considerable number of Cheviot ewes in regular flocks which do not receive the subsidy. However, few of the marketed Cheviots come from these non-subsidized flocks for several reasons. One is that these ewes, having been maintained under kindlier conditions than the flocks on which subsidy is paid, do not benefit as much when moved to lowland farms as do cast ewes from the hills. Specifically, lowland farmers have found that, generally speaking, the cast hill ewes are more hardy and make better use of the feed available than upland or lowland cast ewes. For this reason, farmers with lowland flying flocks tend to buy uncrossed Cheviot ewes for replacements, the term 'uncrossed' usually designating that the ewes came from pure-bred hill flocks. This statement requires the qualification that some regular Cheviot flocks, particularly in Aberdeenshire and south Scotland, are pure-bred flocks not in receipt of the hill subsidy. However, flocks of this type and hence cast ewes from them are few; moreover, the cast ewes are often fed or bred in flying flocks on these farms themselves, this being done particularly in the South-East Region where upland farms are large.

If it is assumed that most of the cast ewes marketed were from hill subsidized flocks, it remains to be explained why there are regional differences in the proportions of cast ewes from flocks on which hill subsidy is paid.

If allowance is made for the fact that some cast ewes from flocks not qualifying for hill subsidy were sold in Aberdeenshire and south Scotland, it can be seen from the figures on page 165 that about 1/5 of the total hill flock was cast in all regions excepting the Highland Region. The low figure for the Highland region arises for reasons similar to those advanced for Blackface ewes (pp. 121-122), namely that low lambing rates lead to the longer retention of ewes, which contributes to higher ewe death rates and hence fewer ewes for casting. Moreover, because ewes in the Highlands are bred on the hills for a longer period and because hill conditions are generally more harsh there, a larger proportion of those which do survive are slaughtered at the end of their hill breeding life than elsewhere.

It should be noted that the proportions of ewes cast to total subsidized ewes and ewes for breeding as opposed to feeding are both higher for the Cheviot than for the Blackface breed. This is a reflection of the generally kindlier hill environment under which the Cheviot breed is maintained.

For Scotland as a whole most of the cast ewes marketed came from hill subsidized flocks, but when the marketing pattern and important supply areas are compared with the distribution of hill subsidized flocks (Maps 1, 15 and 26 and Tables 3 and 6), it can be seen that there are important exceptions to this general statement. For example, although there are only 1,000 Cheviots on which subsidy was paid in Aberdeenshire, markets there handled 5,700 Cheviot ewes for breeding in addition to



2,300 ewes for feeding during 1966. Similarly, some of the ewes sold in south Scotland came from non-subsidized flocks but these were more difficult to isolate because the markets there receive supplies from both subsidized and non-subsidized flocks. However, from what is known it would appear that the proportion was much smaller than in Aberdeenshire. This raises a further point which largely explains not only the high number sold in Aberdeenshire but also the few sold from non-subsidized flocks in south Scotland, namely, that as previously mentioned in another respect (see pp. 159-161), non-subsidized pure and cross-bred Cheviot flocks in Aberdeenshire tend to be maintained on smaller farms than elsewhere and also tend to be on the lowlands rather than the uplands. Arising from this it has become a common practice in Aberdeenshire for a farmer to keep quasi-regular flocks (p. 50). For example, he may buy gimmer replacements, breed them for one or two years and then sell them as young ewes. These might then be used by the purchaser for 2 years and sold again to another farmer who might breed them for one more year in a normal flying flock. In this way and by similar processes of buying and selling ewes, the total of all types is raised above what it would be if the intermediate-aged ewes were kept in regular flocks as they normally are elsewhere in Scotland. It should also be noted that these younger ewes are usually crossed, but since they are still capable of further breeding, they are favoured as much as the uncrossed variety from hill flocks. On the other hand, non-subsidized flocks of Cheviot ewes in south Scotland tend to be kept on large upland farms, where the ewes are bred for 3 or 4 years in regular flocks and subsequently are often removed to other parts of the upland farm for further breeding in flying flocks or for feeding rather than being sold. Of course, there are some young ewes and regular cast



ewes sold from these farms in south Scotland but they are few in proportion to the total, most of which are uncrossed cast ewes from hill farms. Moreover, the regular cast ewes which are sold from these upland farms are usually of the crossed type and hence most of them are fed rather than bred.

This description of supplies of Cheviot ewes for breeding can be summarised as follows:

1. The 55,000 Cheviot ewes for breeding marketed during 1966 came from crossed or uncrossed flocks on the hills, uplands and lowlands.
2. Most of them were uncrossed regular ewes (i.e. 3 to 4 crop) from hill flocks.
3. A significant number of cast ewes were sold from upland and lowland flocks but most of them were used for feeding because they do not benefit as much as hill ewes when moved to lowland flying flocks.
4. Young ewes also formed a proportion of the total but these were important only in Aberdeenshire.
5. From these points it can be seen that the most important supply areas and types of ewes for breeding supplied were (a) the far north - uncrossed regular hill ewes, (b) Aberdeenshire-Moray Firth - crossed and uncrossed young and regular cast ewes - chiefly from lowland farms, (c) south central and south east - chiefly uncrossed regular hill ewes, some uncrossed and crossed regular upland ewes.

#### Movement to Farms

Before considering the distribution of Cheviot ewes, it should be noted that, as with Blackface ewes, it was sometimes difficult to be sure of whether the ewes being sold were for breeding or for feeding and hence undoubtedly some errors were made. However, these were

probably not common and do not invalidate the general patterns of movement presented here.

Considering the movement itself, it is evident from Map 26 that within Scotland the ewes were distributed to farms in the east of the country. This general pattern resembles that of Cheviot gimmers and both arise, as indicated in Chapter I, because it is in the east that crossing flocks of Cheviots requiring replacements are concentrated. This is so because the Cheviot breed is generally suited to the associated features of a dry climate and arable or semi-arable farming found there. It is to these generally drier and more arable areas that the Cheviot replacements are distributed in England too, but there these conditions are found over a more extensive area and are often in the west of the country, for example, in the Eden valley in Cumberland.

Distribution from markets in the far north of Scotland resembles that of Cheviot ewe lambs in that there is a transfer southwards and eastwards to farms over an extensive area from Orkney through Caithness and Easter Ross to the Moray Firth, Aberdeen and Strathmore. However, much fewer in proportion of the ewes are moved to south Scotland or to England. The other main markets in the north are in Aberdeenshire and these distribute locally to farms in Aberdeen, Kincardine, Angus, Perth and Fife. The pattern of distribution from southern markets also resembles that of younger Cheviot replacements; movement is to local farms and north England. Thus, supplies of cast ewes come from northern and eastern hill areas, are further concentrated in markets in the east, and are then distributed to farms in arable and semi-arable areas, that is, to east Scotland and over a more extensive area in England. In each of the main producing areas a proportion of the total are moved locally but because the supply is greater than local demand

in each area, there is a surplus for distribution to further removed areas where local supplies are insufficient.

Wherever the buyers are located, the ewes are used for crossing in flying flocks, if this is taken to include the modified flocks in Aberdeenshire. The majority are bred with a Border Leicester ram to produce Half-Bred lambs but some are crossed directly with a Suffolk Down ram. This latter practice is of greatest importance in Aberdeenshire (Map 7) where, generally speaking, consumers prefer the smaller types of fat lambs, such as the Suffolk cross out of Sutherland hill-type Cheviot cast ewe. Elsewhere too, it is becoming more common to cross Cheviots, including Cheviot cast ewes, directly with a Suffolk Down ram. The main reason for this trend, away from the Half-Bred cross is that the price of Half-Bred ewe lambs has dropped in recent years (p. 157). As yet, however, direct crossing is noticeably concentrated, outwith Aberdeen, only in the Easter Ross-Black Isle area and in parts of Selkirk and Roxburgh (Map 6). As in Aberdeenshire, the smaller types of Cheviot ewes have been found to produce the most suitable Suffolk cross lambs, the hill-type North Country Cheviot being used in the Easter-Ross-Black Isle area and the South Country Cheviot in the Roxburgh-Selkirk area. In north-west England, too, crossing of cast Cheviots of the smaller types with a Suffolk ram is quite common because consumers there generally do not favour the larger type of lambs such as the Half-Bred. Moreover, farmers in the north of England as a whole, excepting for Northumberland, have an aversion to Half-Bred lambs because they find them difficult to fatten.

## Half-Bred Breeding Sheep

### Ewe Lambs, Ewe Hoggs and Gimmers

The ultimate source of all the Half-Bred breeding sheep marketed in Scotland during 1966 was farms on which Cheviot ewes, in particular North Country Cheviot ewes, were crossed with Border Leicester rams. During 1966, 86,500 ewe lambs for breeding were sold from farms of this type, most of which are located in Caithness and Aberdeen in the North-East Region and in the south-eastern Borders, Dumfries and the Borgue area of Kirkcudbright in the south of Scotland (Maps 6 and 7). Of these 86,500, 86 per cent or 75,000 were traced through 19 markets and the remainder of the 11,600 were sold at Oliver's in Edinburgh (1,800) and at Annan (8,500) and Thornhill (1,300) in Dumfries (Map 16).

The total of 86,500 represent about all the surplus Half-Bred ewe lambs bred in Scotland because it is uncommon for a breeder to keep them beyond the ewe lamb stage to sell as ewe hoggs or gimmers. Hence the 12,000 ewe hoggs and 27,900 gimmers marketed represent the proportion of these ewe lambs which were bought by farmers in Scotland and kept for re-sale. Allowing that 38,000 were moved to England at the ewe lamb stage and with the knowledge that most of the ewe hoggs were re-sold again as gimmers in Scotland, it is evident that about 15,000 to 20,000 of the ewe lambs were bought by farmers in Scotland and retained for later use as replacements. In summary, then the 86,000 ewe lambs were distributed as follows:

1. 38,000 taken by dealers and farmers to England.
2. 20,000 to farms in Scotland where they were kept for eventual use as replacements in regular crossing flocks.
3. 28,000 to farms in Scotland from which they were sold again; 12,000

were sold twice, first as ewe hoggs and again as gimmers; 16,000 were sold once as gimmers.

4. All the 28,000 gimmers were distributed to farms where they would be used as replacements; 16,000 were distributed within Scotland, 12,000 within England.

5. Hence, the 86,000 ewe lambs were eventually distributed for use as replacements on farms in England (50,000) and within Scotland (36,000). The supplies, markets and distribution will now be examined for each stage, beginning with the primary or ewe lamb stage.

### Ewe Lambs

#### Supply and Markets

Most of the 86,500 Half-Bred ewe lambs marketed during 1966 came from farms in the North-East, South-East and South-West Regions (Tables 6 and 7). In view of the fact that the extent of these areas is not large, this total of 86,500 is a high one; indeed, the number is about the same as all the other breeds of ewe lambs together (Table 7). This high number from such a small area and hence a small number of farms arises for several reasons. First, the farms on which Cheviot crossing flocks are kept, particularly in Caithness and the South-East Region of Scotland, are densely stocked with breeding sheep (Map 9) and this, together with lambing rates in the range of 125 to 160, or 60 to 80 ewe lambs per hundred ewes, gives rise initially to a high output of ewe lambs per acre. Second, arising from the high, although recently reduced (p. 157) demand for Half-Bred replacements, almost all the Half-Bred ewe lambs bred on these farms are used for breeding rather than for feeding. Moreover, it is not common for the breeder to have a Half-Bred ewe flock of his own and hence most of the ewe lambs are



sold through the store auction markets for use as replacements elsewhere. This point is an important one contributing to the high total because, as previously discussed, about a third of the Cheviot and Blackface ewe lambs are kept on the farms where they were bred for use as replacements.

Within each producing region most of the markets selling Half-Bred ewe lambs draw supplies from local farmers. For example, Thurso market draws supplies from farmers in the northern part of Caithness, Kittybrewster, from farmers in Aberdeen and Banff, and Lockerbie from farmers in Dumfries and western Roxburgh. However, there were some important exceptions to this general pattern. The most important was that the three Edinburgh markets received almost all their supplies from dealers who purchased them at markets in Orkney, Caithness and Aberdeen (Table 20). This pattern is similar to that for Cheviot ewe lambs and arises for the same reason - that for some time after the North Country Cheviot ewe, pure or cross-bred, came into favour in south Scotland, locally produced replacements were insufficient to meet local demand, and the Edinburgh markets established connections with dealers in the northern producing areas to supply them. However, in more recent years the output in south Scotland of both North Country Cheviot and North Country Cheviot cross Broder Leicester (Half-Bred) ewe lambs has, in total, been sufficient to meet local demand there. But, many farmers in south Scotland, through habit and because they feel the northern ewe lambs thrive, "shift" or "do" better than local ones, still prefer to buy their replacements from north Scotland. Similarly, the surplus produced in south Scotland is distributed to farms in England, these lambs, in turn, benefitting from the shift to better conditions of feed and climate. Another exception to the movement of

supplies to local markets, again in south Scotland, is that St. Boswells and, to a less extent, Hawick, markets draw supplies of Half-Bred ewe lambs from farmers within the normal hinterlands of other markets, besides drawing from local farmers in the east of Scotland producing area. This is illustrated below by a sale of Half-Bred ewe lambs at St. Boswells on the 6th August, 1966:

County of Origin	Numbers Sold
Berwickshire	3281
Roxburghshire	404
Peeblesshire	538
Selkirkshire	905
East Lothian	1658
Mid Lothian	1200
Kirkcudbrightshire	1292
Fife	129
Cumberland (dealer)	152
Total	9559

This pattern of marketing arises for the same reasons as did the pattern of Blackface ewe lamb marketing. In a similar manner to Lanark for Blackface ewe lambs (pp. 94-95) the eastern Border markets became established many years ago as the main centres for Half-Bred ewe lambs for farmers in the eastern Border producing area.<sup>21</sup> This early start and the development of more rapid transport allowed them, as time went on, to draw supplies from other producing areas further afield. Like Lanark, too, they tend to draw only the best or top quality ewe lambs from the non-local suppliers whilst the second-best are marketed at centres in these areas. Arising from this tendency, the price of Half-Bred ewe lambs at the eastern Border markets tends to be higher than at markets elsewhere. (Table 29 - note: long term average prices were not available for St. Boswells, but they

are known to be considerably higher than Hawick<sup>22</sup>). Because of these higher prices some farmers do, from time to time, send their poorer quality lambs to these markets in the hope, which is not always fulfilled, of receiving higher prices for them. But usually the reverse is true, that is, the reputation of the market draws buyers and sellers of top quality ewe lambs and hence the high prices are the result, not the cause of the pattern of marketing. Another interesting feature of the pattern, illustrated by the sale at St. Boswells, is that farmers in East and Mid Lothian use St. Boswells market rather than the Edinburgh markets. This arises because the Edinburgh markets are dealers' markets receiving their supplies from north Scotland. Regarding this movement, it should be noted that the figures and percentages for marketings of Half-Bred ewe lambs by region include these lambs in output of both the North-East and South-East Regions. Specifically, the 8900 ewe lambs bought by dealers at markets in north Scotland and sold at Edinburgh have been included in the figures for the North-East and the South-East Regions because they were marketed in both areas. Therefore, if allowances are made for this double counting the total output was 77,600 not 86,500. In addition, if the 8,900 are subtracted from the total for south Scotland, its share of total output drops to 46,000 from 55,000 or from 67 per cent to 60 per cent. This should be kept in mind when using the tables and for this reason the lambs moved by dealers from northern to southern markets have been parenthesized (Table 20).

#### Movement from Markets

Considered as a whole, the striking features of the movement of Half-Bred ewe lambs are (a) the importance of dealers, (b) the transfer

from north to south Scotland and (c) the large proportion of the total moved to England from both north and south Scotland. These features have all been examined previously (pp. 171-173) and can be summarised as follows:

(1) Within the last 50 years, Half-Bred ewe lambs out of North Country Cheviot ewes have replaced or almost replaced Half-Bred ewe lambs out of South Country Cheviot ewes as replacements for Half-Bred crossing flocks in south Scotland. This change began in the 1920s and 1930s, at which time North Country Cheviot ewes were replacing South Country Cheviot ewes in south Scotland. Some surplus Half-Bred ewe lambs out of these newly introduced North Country Cheviot flocks were supplied to local farmers, but the demand exceeded local supply. Thus, there arose a movement from north to south which was effected mainly by dealers who sold through the Edinburgh markets. This pattern has remained much the same to the present day, except that now more farmers from south Scotland go themselves to northern markets.

(2) Although the Half-Bred ewe has been the most important of the lowland breeds in Scotland and the Border areas of England for at least 100 years, it is only 50 years since it first gained popularity in mid and south England. Its popularity stemmed from the fact that it was the best of the semi-arable or grassland breeds for producing fat lambs of the desired weight and rate of maturity, 50+ pounds dead weight at 5-7 months being the usual achieved,<sup>23</sup> (see pp. 155-158 for a full description of the rise in importance of the semi-arable and grassland breeds in England). The Half-Bred ewe is still popular throughout England for much the same purpose but now it ranks behind the Mule and Mashum ewes because they are cheaper to buy, can be supported on less and poorer feed and produce lambs of the type now desired, that is,

lambs of 35 to 40 pounds dead weight in 5 months.<sup>24</sup> Notwithstanding this recent decline, there is still a large annual movement of Half-Bred ewe lamb replacements to all parts of England (Tables 10 and 27 and Map 16). Supplies are sent there from south and north Scotland and farmers and dealers buy in both areas.

Examination of the movement and distribution on a more detailed scale reveals several important factors not adequately covered in this discussion. English buyers, as shown in Tables 7 and 10 and on Map 16, bought an estimated 38,300 ewe lambs of which 30,400 were bought by farmers and 7,900 by dealers. Regionally the totals and types of buyers were: (a) north Scotland - 6,800, 2,700 by farmers and 4,100 by dealers; (b) south Scotland - 31,500, 27,800 by farmers and 3,700 by dealers. This pattern is generally what would be expected, in that English dealers were more important in movement over longer distances and the largest proportion of total supplies came from the nearest major source area within Scotland, that is, the southern regions. However, this apparently straightforward picture is somewhat misleading for two reasons. First, about 4,300 of the ewe lambs included in the total for the South-East Region were bought by English farmers and dealers at the Edinburgh markets (Table 20 - note: estimated number to England from #4-Oliver's: English dealers 500, English farmers 200). These were all bought in north and moved to Edinburgh by Scottish dealers and could have been assigned to the northern area, in which case the totals and type of buyers given above would be considerably different. Of course, this alternative is unsatisfactory because it is debatable whether all of the 4,300 would have gone to England if they were sold only at the northern markets. In other words, it is probable that the closer proximity of Edinburgh to England attracts



buyers who would not travel to the far north of Scotland. A second complicating factor in the movement to England involves an organisation known as the Caithness Livestock Breeders Association. This association was formed in 1964 by a group of Caithness farmers for the purpose of promoting the sale of Caithness-bred lambs throughout Scotland and England.<sup>25</sup> Several steps were taken to this end one of which was to send a representative to visit farmers in the areas to which Caithness lambs were normally sent. This was done because in the past the dealers who took lambs to the consuming areas, particularly to far removed farms in south Scotland and in England, often tried, usually successfully, to sell lambs from other parts of north Scotland as Caithness-bred lambs. As not all these other lambs were of as high a quality as bona fide Caithness lambs, the reputation for the real product suffered. Hence, a representative was sent to south Scotland and England to contact farmers, assess their needs and to take orders for the particular type of lambs required. At first the group favoured the idea of fulfilling these orders by direct consignment, that is, by sending lambs directly from farms in Caithness and by uniquely identifying the lambs as Caithness-bred by affixing an ear tag to each one. These steps were taken because there was a feeling amongst farmers that the auctioneers and dealers were, so to speak, in a conspiracy by which both parties benefitted from the mystery or obscurity surrounding the transfer of stock from north Scotland to the far removed purchasers in the south. However, direct movement was abandoned after the first year because it was too difficult to decide an acceptable price for the lambs. Indeed, even during the first year auctioneers had to be called upon to determine prices and during 1966 and subsequently the lambs have been sold through the auction markets in the normal way.

The system now involves ear tagging by members of the group who wish to do so and the purchasing of these lambs, other things being equal, by a representative of the association. He is supplied with a list of orders and buys the types required through the auction markets if the price is an acceptable one. However, he is not restricted to buying only ear-tagged lambs nor is he obliged to purchase all those that do have ear tags. In other words, some of the ear tagged lambs may be bought and moved by dealers in the traditional way and some without ear tags may be moved by the Caithness Livestock Breeders.

The origin and development of this association has been examined at some length here because it is a symptom of a general malaise in sheep production and movement in Scotland. First, it shows that many farmers are dissatisfied with the auction market and dealer system as a means of matching supplies to demands over a wide area. Second, it illustrates the difficulty of introducing better alternatives, particularly the problem of determining prices if the direct farm-to-farm transfer system is used. In this regard it also shows the difficulty of alternatives in the form of co-operation amongst farmers. Of course, it must be allowed that there was enough co-operation for the association to be formed, but it should be added that the change from compulsory to voluntary ear tagging and the change from direct transfer to the auction system were related and that both arose from the dissatisfaction of some members of the group. What happened was that during the first year of compulsory ear tagging and direct transfer, some members of the group felt that higher prices would have been obtained through the auction system. However, they were loathe to incur the anger of the other members which would be sure to arise if the unmistakably identifiable lambs were sold in this way. So,

ear-tagging was made voluntary, thereby allowing members who wished to use the auction system to do so without the stigma of ear tags. This has been kept voluntary even though all the lambs are now sold by auction because some farmers in the group feel that the ear tag deters buyers other than the association's representative and so that a lower price may be received. Finally, the forming of this association is a symptom of the recent decline in demand for breeding sheep, in particular for Half-Bred and Cheviot ewe lambs. The reasons for the decline have already been discussed and the seriousness of it is indicated by the table of average prices for the period 1950-1968 (Table 29). Although Caithness markets are not shown, it is known that there, too, prices have dropped considerably in the last 5 to 10 years. It is probably this above all other reasons which leads to the search for alternative methods of marketing and movement. In better times, the auction market-dealer system was accepted as an efficient one, but in these more recent times of economic difficulty farmers seem, understandably enough, to be looking for alternatives. However, it could also be said that, influenced perhaps by the climate of the times, the old-established methods are rather too easily dismissed by some farmers as inadequate and irrelevant to present conditions.

Information was kindly provided by the C.L.B. about the distribution of all the 8,000 lambs they purchased at various markets in Caithness during 1966. This information was not, of course, available in the auction sales records because the association themselves were buyers through the auction markets that year. Once bought, however, the lambs were distributed to the farmers who had placed orders with the association and it was these farmers' names, addresses and number and type bought by each which were provided. The classification of the 8,000

lambs, 2,700 of which were Half-Bred ewe lambs, into a buyer's category presented some difficulties. To whichever category they were assigned was inappropriate in some respects, but rather than create a separate category it was decided to include them with the "English dealers". Hence, in Tables 20 and 7 the totals for English dealers of 4,064 recorded and 4,150 estimated for the North-East Region include the 2,700 Half-Bred ewe lambs moved by the Caithness Livestock Breeders. This was also done for the other lambs, most of which were Cheviot and Half-Bred wether lambs for feeding. However, as will be discussed more fully in Chapter III some of these were sent to farms in south Scotland and so were put in the "Scottish dealers" category.

The striking feature of the distribution within England is its widespread nature, that is, a large number were sent to all the regions. This reflects the distribution of Half-Bred regular flocks there and shows that, unlike Scotland, Half-Bred flocks are important in the west as well as the east. This arises because lowland areas in west England, particularly in south-west England, are milder and generally more kindly to sheep than the western lowlands of Scotland. This means that Half-Bred flocks, which require less harsh conditions than other lowland breeds, are kept in western England but not in western Scotland. Of course, there are other reasons for these distributions, such as traditional breeds and availability of replacements and types of flocks, but the greater east-west environmental contrasts in Scotland, including factors of climate and arable versus grassland, are probably the most important ones. Finally, it should be noted that the distribution within England as shown is not a completely accurate guide to the distribution of Half-Bred ewe flocks because the English dealers



would have distributed some of their ewe lambs to counties other than those from which they came and to which their ewe lambs were assigned. However, the regional distribution would probably remain much the same. In addition, some of the ewe lambs would have been sold and moved at the ewe hogg and/or gimmer stages but these were not traced.

Information was available on more detailed basis for the distribution within Scotland. The dealers' ewe lambs were traced via the Edinburgh markets to farms and regional variations in the proportions kept or re-sold were determined by interviews. As shown in Tables 8 and 20 and on Map 27, distribution to farms involved movement (a) from Caithness to the Aberdeen-Moray Firth area within the North-East Region and also to the South-East Region, (b) from Aberdeen to nearby farms in the Aberdeen-Moray Firth area and the East-Central Region as well as to the South-East Region, (c) locally within the two southern regions including, of course, the distribution of northern lambs from Edinburgh markets. A comparison of the distribution of ewe lambs with the distribution of Half-Bred flocks (Maps 8 and 20) might suggest that the ewe lambs were all, or almost all, sent to farms where they would be used as replacements. This is not the case, however. Rather, in a similar manner to Cheviot ewe lambs, most of the Half-Bred ewe lambs distributed to the Aberdeen-Moray Firth area and about half of those distributed within south Scotland were bought by farmers for re-sale as ewe hoggs and particularly as gimmers. Moreover, the larger proportion of the Half-Bred ewe lambs re-marketed in the Aberdeen-Moray area arises for similar reasons to those stated for Cheviot ewe lambs. Namely, farms of all types in the Aberdeen-Moray area tend to be smaller than their counterparts in south Scotland. Arising from this, farmers with Half-Bred regular flocks in the Aberdeen area, whose



fields are usually stocked to capacity with productive breeding sheep and also with cattle, do not usually have space for ewe lamb or ewe hogg replacements and so buy them at the gimmer stage. However, other farmers with similar types of land in the same general area specialise in buying ewe lambs and selling them later as replacements. These farms tend to be too small for regular flocks but it is quite common for the ewe lambs to be tupped and sold as 'gimmers had lambs' or as young ewes (see also pp. 159-160). On the other hand, in south Scotland, particularly in the South-East Region, farmers with Half-Bred flocks often have surplus grass fields on which to maintain ewe lamb replacements through to the gimmer stage. This is possible because the farms are usually larger and less heavily stocked with cattle than those in the Aberdeen area. This latter point is illustrative of a point mentioned in Chapter I, namely that there is now, and has been for many years, a greater emphasis on sheep breeding in the south-eastern Border counties than in the Aberdeen-Moray Firth area. Of course, these comments are not meant to imply that all the ewe lambs distributed to farms in south Scotland and none distributed to farms in the North-East Region are bought and kept; rather it means only that there is a significant difference in degree between the two areas.

#### Ewe Hoggs

#### Supply and Movement to Markets

Most of the 12,000 Half-Bred ewe hoggs marketed during 1966 came from farms where they had been previously purchased as ewe lambs, thus, as expected, most of them were marketed at centres in Aberdeen and in the South-East Region. However, the fact that 5,200, or almost half, were sold at the three Edinburgh markets and none was recorded at other

centres in the South-East Region requires some explanation. The concentration of supplies at these markets has arisen through a process whereby arable farmers in the vicinity buy Half-Bred lambs at these markets in the autumn and keep them over the winter to make use of short-term ley grass which is part of the normal arable rotation. For various reasons, including the use of the ley grass for mowing, for silage and for ploughing under to be replaced by rape for autumn feed, these farmers have found it more convenient to dispose of the ewe lambs in the spring as ewe hoggs at the Edinburgh markets from which they were purchased. These farms can be thought of, as it were, as accommodation land for the markets because it is mainly because of their proximity to them that this practice has arisen. Hence, most of the ewe lambs distributed in the autumn to farms in the Lothians were sold again as ewe hoggs the following spring. But, in addition to these, numbering about 3,000, the Edinburgh markets received about 2,000 Half-Bred ewe hoggs from dealers in Aberdeenshire. About one half of these were purchased as hoggs by the dealers at Kittybrewster market, but the other half were bought by the dealers as ewe lambs in Aberdeen or the far north and wintered on rented grass. This latter practice makes it difficult to separate the dealers from farmers but there is one essential difference. The dealers move their own ewe hoggs directly from Aberdeen grazings to Edinburgh markets but Aberdeen farmers sell their ewe hoggs at Kittybrewster market where some are bought by the fore-mentioned or other Aberdeen dealers and then moved to Edinburgh. The farmers selling ewe hoggs at Kittybrewster market purchased them as ewe lambs at this and other Aberdeen markets in the autumn in a similar manner to farmers who bought and sold at the Edinburgh markets. However, the Aberdeen farmers were spread over a

wider area and hence their farms have fewer of the characteristics of accommodation land than those near Edinburgh. Elsewhere, only Inverness and Lockerbie markets handled Half-Bred ewe hoggs (Map 16 and Table 21). Inverness market received supplies from farms in the Inverness-Black Isle-Easter Ross area, most of which were bought as ewe lambs in Caithness. Lockerbie drew on local farmers who wintered ewe lambs bought at Annan, Thronhill and Lockerbie.

#### Movement to Farms

Although a much smaller number was involved, the distribution of ewe hoggs closely resembled that for ewe lambs. Ewe hoggs from the North-East Region, in this case from Kittybrewster, were distributed locally to farms in Aberdeen and farther afield to the South-East Region and to England (Table 21 and Maps 16 and 28). Similarly too, markets in the South-East Region, in this case the Edinburgh markets, distributed dealers' sheep from north Scotland as well as local supplies to farms in the South-East Region and to England. At one eighth, the proportion of the ewe hoggs sent south of the Border was less than for ewe lambs but in both cases the distribution was a widespread one (Tables 7, 10 and 27).

#### Gimmers

##### Supply and Movement to Markets

An estimated total of 27,900 Half-Bred gimmers was marketed in Scotland during 1966. Ninety per cent of these were recorded and once again it was in Dumfriesshire in the South-West Region that most of the unrecorded ones were sold (Table 21 and Map 16). Total supplies were divided in a 3 to 2 ratio between the north (North-East and East-Central

Regions) and the south (South-West and South-East Regions) of Scotland. However, for reasons already discussed (pp. 182-183), the 12,000 sold in north Scotland represent almost all the ewe lambs previously distributed to farms there, but the 16,000 in the south represent only about half the ewe lambs previously distributed (Tables 8 and 9). The bulk of the supplies in both areas came from farmers who bought the gimmers as ewe lambs. Hence, it is not surprising that Kittybrewster in Aberdeen and St. Boswells and Reston in the south-eastern Border area were the most important centres (Map 16). Moreover, additional importance was given to these centres by the fact that they also receive most of the gimmers which were bought as ewe hoggs for re-sale. Elsewhere, markets received most of their supplies from local farmers who bought the gimmers as ewe lambs.

#### Movement to Farms

At 44 per cent of the total marketed, the proportion of gimmers moved to England was similar to that for ewe lambs (Table 7). The distribution of both was widespread but a much higher proportion of the gimmers went to northern England. Time did not permit a full investigation of this difference, but it is known to be due, in part at least, to (a) the promotional activities of the Caithness Livestock Breeders who contacted farmers in and sent several thousand ewe lambs to southern England, (b) the milder climate and generally kindlier conditions of southern England allow more of the ewe lambs to be bred as ewe lambs, so farmers there are more likely to purchase them at that stage.

The distribution of gimmers within Scotland reflects the distribution of regular Half-Bred flocks (Maps 8 and 29) with the qualification that different proportions of the replacements are bought at the gimmer stage

in different areas. Regionally the distribution is similar to ewe lambs and ewe hogs; that is, markets in the North-East Region distribute locally and to south Scotland, whilst the southern markets distribute locally (Map 29 and Tables 8, 9 and 21). The process of distribution is different for gimmers, however, in that dealers do not move any from north to south Scotland. The Edinburgh markets are thus of little importance as distributors of gimmers (Table 21 and Map 16).

### Half-Bred Ewes

#### Supply and Movement to Markets

Most of the 21,600 Half-Bred ewes for breeding marketed during 1966 were cast ewes which had borne three to four crops of ewes in regular crossing flocks. However, there were some, reaching highest proportions in Aberdeenshire, which were one to two crop ewes. As with the Cheviot ewes of this type (p. 167), these young draft ewes usually came from farms which are too small to maintain normal regular flocks of four age groups of ewes; hence the practice of keeping one or two age groups in quasi-regular flocks.

The regional output of and important markets for Half-Bred ewes reflect, of course, the distribution of regular and quasi-regular source flocks. Thus, the markets of St. Boswells, Hawick and Reston, which draw on the main source area in the south-eastern Borders, together handle about 80 per cent of the total for Scotland (Tables 6 and 22). Except for another 600 sold in the South-East Region at the 3 Edinburgh markets, the rest come from the other 4 regions, and are presumably ranked in accordance with the number of ewes in source flocks within them.



Movement from Markets

Only 11,000, or less than half of the total Half-Bred ewes marketed during 1966, remained within Scotland. The main reason for this low proportion is that there are only a limited number of areas in Scotland where conditions are good enough to extend the breeding life of cast Half-Bred ewes. These are concentrated in the eastern lowlands, from Aberdeen south through Strathmore to the Lothian coastal strip and the Merse of Berwick. However, not all the farms in these suitable areas actually require cast Half-Bred ewes. For example, a large number of farms in Strathmore and the Lothians have no breeding sheep, a situation which is rapidly developing in the Merse, too, although there it is still the traditional practice of keeping regular Half-Bred flocks which does most to reduce demand for cast ewes. The farms which do keep Half-Bred flying flocks in these areas, and hence the farms to which cast Half-Bred ewes are distributed, tend to be on the best land. On a typical farm of this type, most of the land is devoted to cash crops but there is also a limited acreage of ley grass and turnips in the rotation which, although insufficient to support enough ewes for an economic regular flock, can be profitably devoted to flying flocks. Of course, as mentioned earlier, not all farms of this general type actually have flying flocks. Specifically, it would appear that a higher proportion do so in the South-East Region, particularly in the Merse, because supplies are available in greater numbers there and lowland breeding sheep are, and have been for many years, a more important part of the farm income there than elsewhere in Scotland. However, as is so often the case, this difference is one of degree rather than of kind. For, as shown on Map 29, a considerable number of cast

Half-Bred ewes were also distributed to farms to the lowlands of Aberdeenshire and the East-Central Region and to the Biggar-Lanark area and Dumfries in the South-West Region.

The obverse of the low proportion of cast Half-Bred ewes staying within Scotland is the high proportion which were sent to England. A combination of factors give rise to this movement, including proximity to the main source area in Scotland (i.e. the Border markets), the larger area in England suitable for profitably prolonging the breeding life of cast Half-Bred ewes, and, of course, the desire to do so by many farmers on such land. Then, too, some farmers in England feel that the shift south from Scotland benefits the Half-Bred ewes more than the local shifts undergone by alternative English breeds. However, distribution within England is confined mainly to the Northern and Midland Regions because in southern England there are equally suitable alternative supplies which can be bought closer to home, namely Welsh Half-Bred and Clun Forest cast ewes from the Welsh borderlands (Tables 10 and 27). In view of these alternatives, it may be wondered why so many more Half-Bred replacements in the form of ewe lambs, ewe hoggs and gimmers were bought by farmers in the south of England. The main reason for this difference appears to be that farmers are generally less particular about the breed of cast ewe flock they maintain than they are about the breed they choose for regular flocks. Hence, several breeds being often more or less equal in the choice of cast ewes, the nearest suitable source will be used. In any case, most flying flocks are kept only as a sideline and hence the farmer is often not concerned about seeking breeds from distant areas even though they might, and often would, be more suitable than those locally available.

Down-Cross Breeding Sheep

In recent years an estimated 1 million of the 3.6 to 3.8 million lambs produced annually in Scotland have been Down-Cross lambs out of Half-Bred, Greyface and Cheviot ewes.<sup>26</sup> Assuming that half or 0.5 million of these were ewe lambs, the 10,300 passing through auction markets during 1966 represent only 2 per cent of the total available (Table 7). Moreover, this probably represents almost all the Down-Cross ewe lambs used for breeding because few were kept for replacement on the farms where they were bred, and few were marketed for the first time as ewe hoggs or as gimmers. This extremely low proportion for breeding arises for several inter-related reasons. First, Down-Cross ewes in Scotland, most of which are the product of Half-Bred ewes and Suffolk Down rams, are large and heavy ewes requiring a mild climate and an abundance of feed, including grass, foggage, hay, roots and cereal mixtures. These requirements at the outset limit the possible areas for Down-Cross ewes to the best arable areas. But, the lambs produced from these ewes, when mated with Down rams under good arable conditions, tend to be too large and heavy for current consumer demand. Indeed, at this stage of crossing the lambs differ little from the pure-bred Down lambs, and these, as already stated (pp. 155-156), were replaced in the arable counties of England by lighter cross-bred lambs out of grassland and semi-arable ewes. For these reasons, then (the limited areal extent of suitable conditions and lack of popularity in even these suitable areas), few Down-Cross ewe flocks are kept and hence the demand for replacements is likewise small. It should be noted here, however, that the Down-Cross replacements from Scottish markets represent only a proportion of the total from all sources moved to farms in England.

Ewe LambsSupply and Movement to Markets

The total marketed supply of 10,300 Down-Cross ewe lambs is a slight underestimate of the actual number eventually used for breeding, because some of the Down-Cross ewe lambs sold ostensibly for feeding along with Down-Cross wether lambs under the general name of Down-Cross lambs were later used for breeding. This is a similar situation as obtained for Greyface ewe lambs and arises for the same reason. Namely, most of the ewe lambs for both these breeds are fed, and arising from this it has become common for the seller to market them for this purpose and leave the buyer to select the best ones for breeding from them. The exact number of Down-Cross ewe lambs selected for breeding in this way is unknown but it is unlikely that it would be more than 5,000. Hence, even allowing for these, the total of 15,300 is still a very small proportion of the 1 million Down-Cross lambs bred or the quarter million marketed during 1966.

On the assumption that the regional distribution of supplies of ewe lambs sold specifically for breeding are an accurate guide to the distribution of total output, it is apparent that the south-eastern Borders contributed the vast majority (Tables 6 and 23). This concentration of supplies is due in part to the fact that almost one quarter of the total Down-Cross lambs bred in Scotland were produced in this area. However, this in itself does not explain why almost three quarters of the ewe lambs for breeding originated there. This relatively much higher proportion arises because (a) this area is close to the main areas of demand which are the Merse of Berwick and in the North-East Region of England, (b) Suffolk Cross Half-Bred ewe lambs



are much more popular for further breeding than Suffolk Cross Greyface or Suffolk Cross Cheviot ewe lambs and it is in the south-eastern Borders that the Half-Bred type are most important within Scotland (p. 35). Hence, the main supply area coincides with the distribution of Half-Bred ewe flocks in the lower Tweed valley and the Border markets of St. Boswells, Hawick and Reston handle most of the trade (Table 23 and Maps 17 and 30). Elsewhere in Scotland the farms supplying ewe lambs for breeding were too few and scattered to justify the drawing of supply hinterlands.

#### Movement from Markets

Because Down-Cross ewe flocks can only be supported on the best arable land, which is very limited in Scotland, it is not surprising that 71 per cent of the total ewe lambs marketed were moved south of the Border. Of course, it is quite possible that all the ewe lambs for eventual use in England could have been bought by farmers in Scotland and moved south at the ewe hogg or gimmer stages. In fact, as will be seen, some were handled in this way, but most of them were moved at the ewe lamb stage. This is so because some of the English buyers prefer to buy their replacements as ewe lambs, often with the intention of breeding them at that stage, and also because, as has been seen for the other breeds, it is common for a large proportion of the ewe lambs bought for re-sale to be moved at that stage to the same general area where they will be later sold as gimmer replacements.

The striking features of the distribution within England is the concentration in the eastern regions, particularly in the North-East (Table 28). The eastern bias arises because it is there that the best arable land is found and the northern bias arises presumably



because other breeds performing similar functions are more readily available in the south-eastern counties. In this regard, it is known that the Suffolk cross Welsh Half-Bred ewe, to name one example, is popular in southern England. Within the main consuming area of the North-East Region, the county of Yorkshire stands out above all others; indeed this county alone took 3,600, or about 70 per cent, of the total moved to England (Table 28). This is particularly striking in view of the fact that these 3,600 represent a higher number than any of the other Scottish breeds moved to Yorkshire and these, of course, were moved south in far greater total numbers. This concentration of Down-Cross ewe lambs in Yorkshire arises in part because of the large area of good arable land to be found in the East Riding but is also due to the high esteem in which the Suffolk cross Half-Bred ewe is held there, in particular by farmers on the Wolds. The second point is quite different from the first because there are English alternatives to the Down-Cross Half-Bred ewe which could be used.

Movement within Scotland was characterized by local transfers within the arable areas, in particular within the arable land of the south-east Borders (Map 30 and Table 23).

Some of the buyers used the ewe lambs immediately or eventually as replacements but, as will be seen, most of them were resold as gimmers.

### Gimmers

#### Supply and Movement to Markets

Although a small number of Down-Cross ewe hoggs may have been selected for breeding from those sold under the general heading of Down-Cross hoggs, none were sold specifically as ewe hoggs for breeding during 1966. There were, however, 3,500 marketed at the next or gimmer

stage. These represent almost all the ewe lambs which stayed within Scotland; indeed this number is, in fact, greater than the recorded number which did stay (Table 7). This arises because not all of the ewe lambs for breeding were sold as such. Thus, for example, although only 152 ewe lambs were recorded at Kittybrewster, 831 gimmers were sold there. This, however, is an extreme case and arises because, as with Greyface ewe lambs (see p. 130) it is more common in Aberdeen than elsewhere not to sell the breeding ewe lambs separately.

#### Movement from Markets

The distribution of Down-Cross gimmers closely resembled that for ewe lambs. Over half the gimmers were moved south to England from the Scottish Border markets and most of these were distributed to farms in north England, in particular to the Wolds of Yorkshire (Table 28). In this regard, it is interesting to note that in recent years arrangements have been made whereby auctioneers from Oliver's of Hawick travel south each autumn to Fridaythorpe on the Yorkshire Wolds where they conduct a sale of several thousand Suffolk Cross gimmers for a Yorkshire farmer-cum-dealer who bought them the previous autumn as ewe lambs at Olivers. Amongst other things, this illustrates the close relationship which has been established over the years between farmers in north England and the eastern Border markets of Scotland. Regarding the distribution of the above mentioned gimmers from Fridaythorpe it can be said that most of them too, were purchased by farmers on the Yorkshire Wolds. However, because this sale took place in England it was not recorded in the Scottish totals.

The 1,400 gimmers distributed within Scotland were moved from markets to farms in the eastern arable areas (Map 30 and Table 23).

Farmers in the Merse bought all the gimmers distributed within Scotland from the Border markets and also purchased some from Kittybrewster market in Aberdeen, the latter market also supplying farmers in the Moray Firth-Aberdeen-Angus area.

### Ewes

#### Supply and Movement to Markets

Some 2,900 Down-Cross ewes, most of which were Suffolk Cross Half-Bred ewes, were sold at Scottish markets during 1966. Most of these were 3 to 4 crop cast ewes and were sold at Kittybrewster, Hawick and Reston (Map 17). The number of farmers selling were too few and too scattered, however, to delimit important supply areas.

#### Movement from Markets

Other things being equal, the better the environment to which cast ewes for further breeding are moved as compared with the conditions under which they were previously bred, the more and larger the lambs they produce and the greater the profit they bring to the purchaser of flying flock replacements. This is true for Down-Cross ewes and involves a movement from the best arable farms in the east of Scotland to even better conditions in north-east England. Indeed, over 80 per cent of the Down-Cross ewes were moved south of the Border during 1966, and as with young replacements, the East Riding of Yorkshire was the main destination (Tables 7 and 28). Of course, the same general principle of movement to better conditions also holds true for Scotland but such conditions are of limited extent and hence very few Down-Cross ewes remain in the country (Table 7 and Maps 17 and 30).

Down-Cross Breeding Sheep - Types and Trends

At various points in this discussion it has been mentioned, but perhaps not adequately stressed, that most of the Down-Cross sheep now produced in Scotland are crosses between Suffolk rams and Half-Bred ewes. As stated in this and the previous chapter, there has been a trend in recent years towards lighter and leaner lambs. This trend has been expressed in various ways including the decline of the Oxford Down ram in favour of the Suffolk Down since the 1950s and, more recently, by the decline of the Half-Bred ewe in favour of the Greyface and Cheviot in Scotland and the Mashum and Mule in England. Moreover, partly in consequence of this but also arising somewhat independently, there are indications that many of the farmers in England who now maintain Suffolk cross Half-Bred ewe flocks would change over to Suffolk Cross North Country Cheviot, or, to a less extent, to Suffolk cross Greyface ewe flocks if replacements were made available. Of course, as has been mentioned, the demand for Down-Cross replacements is small and hence it is unlikely that the present breeding pattern in Scotland would be altered for this reason alone. However, taken together with the other factors working against the Half-Bred ewe it is probable that an increasing number of North Country Cheviots will be crossed directly with Suffolk rams. If this does take place, and there are good reasons for believing that it will, it will be the first major alteration on the female side of the integrated system for over 100 years.

There is, however, an alternative possibility for achieving smaller and lighter lambs which would not radically alter the present structure, namely the smaller or South Country and hill-type North Country Cheviot ewes could be used in far greater numbers than heretofore for

crossing with the Border Leicester. Moreover, the larger park-type North Country Cheviots, which are the type most commonly used at the present time for this purpose, could be reduced in size through alterations in management and feeding. In consequence, Half-Bred ewe lambs and hence Half-Bred ewes would be smaller and lighter and, when these were crossed with Suffolk rams, smaller ewe lambs for further crossing with Suffolk rams would result.

#### Summary of Movement of Sheep for Breeding

(1) Excepting for flocks maintained on hill grazings, most flocks in Great Britain are cross-bred flocks in which ewes of the hill breeds or crosses derived from them are mated with rams of the arable breeds. The female rather than the male side of the hill and upland, or grassland and semi-arable, breeds is used because it is only the females, through their milkiness, which can fully develop the early maturing and fleshing qualities contributed by the arable breeds of rams. This combination is a fortunate one for hill and upland dominated areas such as Scotland not only because it provides a more profitable outlet than otherwise for surplus female sheep but also because the scale of movement is much larger for the female than the male side (i.e. 1 ram services about 30 ewes). On the other hand, breeders providing the male or arable side, in particular breeders in the arable areas of England, have been less fortunate. They formerly kept pure bred Down and Longwool flocks in large numbers to produce fat lambs, but now only a limited number of such flocks is required to produce rams for the well-nigh ubiquitous cross-bred system.

(2) The female side of the crossbreeding system is interdependent and stratified. Thus, breeding sheep from the pure-bred hill flocks provide



female replacements for crossing flocks on the uplands and these flocks, in turn, provide female replacements for crossing flocks at lower elevations and so on until the lowest level is reached.

(3) If the replacements required are cast ewes, movement is direct from the regular breeder (via markets) to the farmer requiring replacements for his flying flock.

(4) If the replacements required are for a regular crossing flock the farmer can purchase them from: (a) the breeder (via markets) as ewe lambs, ewe hoggs or gimmers, (b) a farmer who bought them as ewe lambs or ewe hoggs and sells them as ewe hoggs or gimmers. However, except for the ewe lamb stage, movement is usually of the (b) type because if the breeder keeps his surplus ewe lambs beyond that stage he will have to winter them away as ewe hoggs and/or reduce his regular breeding flock to accommodate them.

(5) Most farmers with flying flocks keep sheep only as a sideline to use grass or arable by-products which would be otherwise wasted. They are not, therefore, overly particular about the specific breed, or even the quality of cast ewes they purchase. This lack of interest and specialisation means that, other things being equal, farmers will maintain flying flocks of the breed for which supplies are locally available. Moreover, this is usually the case because (a) 4/5ths of the cast ewes are from hill grazings which means that, regardless of breed, the main requirement of transfer to better conditions is fulfilled if they are moved to local upland or lowland farms in any particular area, (b) owing to the distribution of hills, uplands and lowlands, supplies are usually available locally in sufficient numbers to meet local demand. Hence, most of the movements are short distance ones involving a transfer from hill to upland and lowland farms within the same general area. Of course,

supply and demand do not always balance over a local area so longer distance movements do take place. For example, many of the lowland ewes, in particular the Half-Breds, and Down-Crosses, are capable of being bred further only if moved south to England.

(6) Regardless of the breed kept, flying flocks tend to be maintained on dairy farms and cropping farms provided that neither type maintains regular breeding flocks. Such farms are found in all the lowland areas of Scotland but are particularly concentrated in the South-West and East-Central Regions. Indicative of this concentration is the fact that 70 per cent of the cast ewes replacement staying within Scotland during 1966 were moved to farms in these two regions.

(7) Farmers with regular flocks consider them not merely as a sideline but as an important, if not the most important, part of their farm income. Hence, unlike farmers with flying flocks, the availability of local replacements is not the main factor influencing the breed kept. Rather environmental conditions such as soil, climate and feed available are the main factors to be considered. Of course, it is often the case that these conditions favour the breed for which replacements are locally available. But there are many instances where they do not coincide and hence replacements are often transferred long distances. For example, there is a large scale movement of Half-Bred replacements from the far north of Scotland to south Scotland and north England, and, indeed, some of them go as far as the south of England.

(8) If supplies and demands for replacements for regular flocks have to be matched over long distance farmers often do not want to go far afield themselves but instead rely upon dealers to effect the transfers from distant to local markets. Alternatively, for this and other reasons (see point (4)), but with the same general result, the farmer

may prefer to purchase his replacements at local markets from another farmer who bought them at an earlier stage at distant markets.

## CHAPTER III

## MOVEMENT OF SHEEP FOR FEEDING

In the previous chapter the movement of female breeding replacements were traced between farms in the integrated and stratified system. In this chapter the movement of the other sheep produced by this system, the lambs and ewes for feeding, will be examined in a similar manner. The important surplus or supply areas will be delimited and these supplied will then be traced through the auction markets to the farms where extra feeding sheep or, as it were, feeding replacements are needed.

## GENERAL FEATURES

A. Supply

## Total Supply by Type of Flock

3.85 million ewes, gimmers and ewe lambs were put to the ram in the autumn of 1965 and from these approximately 3.7 million lambs were produced in the spring of 1966. This average of about 1 lamb per ewe is misleading in that it conceals wide differences between the output from different types of flocks. The most striking difference is that between the output of lambs from the hill flocks on the one hand and the upland and lowland flocks on the other. For 1966, figures illustrating this difference based on the known number of ewes in each group and their approximate lambing rates were as follows:-

Type of Flock	Number of ewes bred (millions)	Number of lambs bred (millions)	Average Number of lambs per ewe
Hill Subsidized (Pure-bred Blackface, Cheviot, Zetland)	2.41	1.78	.73
Upland and Lowland (Cross-Bred Blackface, Cheviot, Zetland, Half-Bred and Greyface)	1.44	1.95	1.34
All Flocks	3.85	3.73	.97

Hence, at the outset it can be said that owing to different lambing rates, the potential supply of lambs for feeding is higher per ewe bred in the upland and lowland area. Moreover, this difference is widened further by the fact that a much larger proportion of the hill lambs are used for replacements. Indeed, of the 1 million lambs required for this purpose, about .7 million were from hill flocks and only .3 million were from upland and lowland flocks. This, of course, arises from the integrated system whereby the hill flock besides being self-replacing, also provide replacements for the upland crossing flocks. Thus, taking this into account, the total and average number of feeding lambs produced by the two groups were:-



Type of Flock	Number of Ewes Bred  (millions)	Lambs for Feeding  (millions)	Average Number of lambs for feeding per ewe bred
Hill Subsidized	2.41	1.08	.45
Upland and Lowland	1.44	1.66	1.14
All Flocks	3.85	2.74	.71

Considered areally, rough hill grazings (Map 6), which occupy about three quarters of the agricultural land and maintain about two thirds<sup>1</sup> of the national ewe flock, produce only two fifths of the lambs for feeding. On the other hand, three fifths of the feeding lambs come from the uplands and lowlands which occupy only one quarter of the agricultural land and support one third of the total ewes.

However, as with the sheep for breeding, only a proportion of these supplies enter the store movement. During 1966, approximately 1.4 million lambs were home bred and fed and the other 1.32 million were sold for feeding on other farms.<sup>2</sup> As would be expected, a higher proportion of the hill than the upland and lowland lambs were sold for feeding, the numbers and proportions for 1966 being .62 million or three fifths of the hill lambs and .7 million or just over two-fifths of the upland and lowland lambs. Taking these figures into account the overall supplies from each type of flock during 1966 were:-

Type of Flock	Number of Ewes bred (millions)	Lambs for feeding (millions)			Average Number of lambs for feeding entering the store movement per ewe bred
		Total	Home-Bred and Fed	Sold as Stores	
Hill Subsidized	2.41	1.08	.46	.62	.26
Upland and Lowland	1.44	1.66	.96	.70	.49
All Flocks	3.85	2.74	1.42	1.32	.34

Therefore, as far as the store movement was concerned, supplies came about equally from each group. Or, in other words, about half the lambs moved came from the rough pastures of the Highlands and Southern Uplands and the other half came from the eastern, central, and southern lowlands. (Maps 3 and 10).

#### Total Supply by Breed

The factors affecting the output of feeding sheep for the store movement by type of flock can be summarized as follows:-

(a) initial output of feeding lambs per ewe bred is higher under lowland conditions and becomes progressively lower as one proceeds upslope because

- (1) lambing rates decline progressively with increasing altitude and harsher conditions,
- (ii) The proportion of the surviving lambs needed for breeding replacements increases upslope owing to

the integrated system,

- (b) the proportion of the lambs for feeding available which is sold through the store markets tends to increase upslope because progressively fewer can be fed where bred as one moves from arable through semi-arable to hill grazing environments.

That these processes or tendencies also operate for each breed within the general groups mentioned above can be seen from the figures below (from Tables 1, 3 and 30):

(Numbers in thousands)  Breed	Number of ewes bred from:	Number of lambs:	Lambs kept or sold for breeding	lambs for feeding		
				Total	Home- bred and fed	Sold as store for feeding
Blackface	1920	1363	626	737	309	428
Cheviot & Zetland	490	420	174	246	57	189
Half-Bred )		286	103	183	75	108
)						
Greyface )	1440	613	45	568	232	336
)						
Down-Cross)		1050	35	1015	752	263
All Breeds	3850	3732	983	2749	1425	1324

The effects of the processes can perhaps be best illustrated by a comparison of Blackface and Down-Cross lambs, the former being maintained on the poorest hill grazings in self-replacing flocks and the latter being maintained on the best arable land in crossing flocks at the end of the integrated chain. For the Blackface breed,

almost half the total lambs produced were withdrawn at the outset for breeding purposes in contrast with only one twentieth for the Down-Cross breed. On the other hand, a far higher proportion of the Down-Cross lambs were home-bred and fed, so that in the final analysis about three tenths of the total Blackface lambs bred were sold as stores for feeding as compared with about one quarter of the Down-Cross lambs.

These processes are useful as a general guide to the supply of lambs for feeding but do not, in themselves, adequately explain each and every part of it. Some features require the use of information which has been given in previous chapters. For example, although both are essentially upland breeds, the higher proportion of Half-Bred than Greyface lambs used for breeding and the consequently smaller proportion of the total available and sold for feeding arise because far more of the Half-Bred ewe lambs are used as replacements for crossing for flocks than are Greyface ewe lambs. Similarly, to take another example, the significant difference in the proportions of the hill lambs which are home-bred and fed arises because Cheviot lambs are much slower to mature than the Blackface lambs and hence fewer can be graded fat off hill grazings. This factor, as discussed on pp. 11-12, has been one of the reasons for the rising popularity of the Blackface in recent years. However, other features such as the far greater proportion of Blackface lambs available for feeding which enter the store markets from the South-West as compared with the other regions (Table 30) are not explicable in these terms. These features are important but it is more appropriate to discuss them in a later section of this chapter where

the supplies of each breed are considered individually.

Even allowing for reductions for breeding and for home-feeding, the output and breeds of marketed lambs by region is generally what would be expected from the distribution and lambing rates of breeding flocks. Thus, almost all the feeding lambs marketed in the Highland Region are hill lambs whilst supplies in the South-East are dominated by Down-Cross and Half-Bred lambs and so on. As these breed distributions and other relevant features contributing to regional supplies have already been discussed in previous chapters there is no need to reiterate them here. Nevertheless, it may be useful to consult the ground previously covered, in particular the maps and descriptions given in Chapter I.

#### Sequence of Supplies

In harmony with the interrelated factors of climate and available feed, the Scottish ewe flock is tupped in the autumn and produces its lamb crop in the spring. As far as store lambs for feeding are concerned, the first supplies to be sold are marketed with their mothers as "ewes with lambs at foot". Supplies of these come on the market in late March and continue through until about June. They are usually cast ewes with twin lambs from farms where flying flocks are kept over the winter but are not wanted during the summer, the prime example of this type of farm being, of course, the dairy farm. Marketed supplies of these are few, however, and during 1966 accounted for less than 4 per cent of the 1.32 million stores moved (Table 31 - the lambs sold along with their mothers as "ewes with lambs at foot" are in parenthesis). Then following



a lull in July when only a few of the heavier stores, in particular the Down-Cross lambs, are sold, the main supplies begin to appear on the market in August and continue at a high level until November or December. Indeed, with only a few exceptions, for each breed and within each region four fifths of the store lambs are sold from August to December; moreover, almost two-thirds of the total are sold in August and September alone. After December, marketed stores, now called hogs, are few but some are sold in each month from January to June (Table 55).

Ideally, it would have been desirable to have recorded the disposal of store lambs in sequence beginning with the lambs sold during the spring of one year, continuing to the autumn peak of lambs in the same year and finishing with the hogs sold from January to June of the following year. However, for reasons already discussed (pp. 78-79), this was not possible. The spring and autumn lambs were recorded in sequence for 1966 but the hogs recorded represented lambs carried over from the 1965 spring lamb crop. This is not a serious limitation, however, because, although the numbers might have differed somewhat, the supply areas, patterns of movement and distribution are known to be generally the same from year to year, at least in the short term. In any case, the hogs accounted for less than one tenth of total marketings and hence were of relatively minor importance to the overall analysis.

#### B. Demand

A complete analysis of the demand for feeding sheep is an extremely difficult task involving numerous related factors. A far

from exhaustive list of these includes the type of farm, the amount and types of feed available, the supply of home-bred lambs for feeding, the time when bought-in stores are required, the particular breeds and types of stores suitable for the feed available at different times and the expected or realised price differences between store and fat sheep. All these factors and their influence on each movement will be examined in detail later but it is useful to consider the general influence of the most important factors at this point.

#### Feed Available

The main types of feedingstuffs used singly or in some combination for fattening lambs in Scotland are (1) grass, including foggage, (2) green fodder, chiefly rape but include kale and sugar beet tops, (3) roots, mainly turnips, (4) others including corn stubbles, loose corn mixtures and prepared feeds such as pellets, cake and draff, (5) fattening off ewes' milk, in which case the ewes receive the feeds listed.

With the exception of longer ley grasses and rough grazings, these crops are associated with arable and semi-arable systems of farming in the lowlands of east, central and south Scotland (Maps 3 and 31 to 36). Moreover, the longer ley grasses and rough grazings are usually used to fatten home-bred lambs indirectly through their mothers' milk and hence it can be said at the outset that demand for purchased stores for feeding is confined mainly to the improved land, most of which is below 500 feet (Map 10).

However, a knowledge of the distribution of the principal feeding crops does not, in itself, provide a measure of the total

demand for feeding lambs. This is so because on almost every farm these crops are also used for other purposes such as maintaining a ewe flock, a dairy or beef breeding herd or for storing and/ or fattening other dairy and beef cattle. Unfortunately, no information is available on the relative amounts of each type of feed devoted to these purposes, so that the amount of feed can not be used as a measure of demand for lambs for feeding. However, a recent survey of regional types of sheep feeding in Scotland based on 2,000 full time farms has been made by D.A.F.S. (Table 31 ). This does not provide a measure of total demand but it does provide a useful guide to regional and seasonal variations in the types of feed used. Moreover, since each breed requires different feeds and matures at a different rate, the table, by implication, is an indicator of the breeds of sheep required. Its full usefulness will become apparent later, but is convenient to summarize here the main points which are:-

- (1) Grass is the most important feed in all regions from June to September; grass alone predominates in the South-West and South-East Regions and grass alone and grass with turnips are both important in the other regions.
- (2) During October and November grass alone predominates in the South-East, South-West and Highlands, rape being an important minority element in the latter two regions and grass with turnips in the South-East. In the North-East grass and turnips continue to be overwhelmingly predominant but in the East-Central Region

rape and sugar beet-tops are the most important feeds, with grass alone as a minority element.

(3) Turnips alone or grass with turnips are by far the most important feeds in all regions from December to May with the exception of the South-West Region where grass alone and rape are also used in significant quantities.

(4) In a more general way, it can be said that grass, foggage, and rape are the predominant feeds for lambs and grass with turnips or turnips alone are the most commonly used feeds for hogs.

#### Sequence of Supplies

If the numbers fed at various times of the year are now considered, it can be said that in recent years there has been a marked concentration of fat sheep supplies in the autumn months. This contrasts with the much more evenly distributed sequence of marketings which existed thirty to forty years ago.<sup>3</sup> There are several reasons for this greater autumn concentration, the most important of which are:-

- (1) The main winter feeding crop, turnips, has declined to less than one half its acreage of forty years ago.<sup>4</sup>
- (2) In recent years, a greater proportion of the winter feed available has been used for cattle rather than for sheep. This applies in particular to dairy cattle and hence has affected the South-West Region more than the other regions.<sup>5</sup>
- (3) Most importantly, since 1941 there has been a system

of guaranteed prices which has tended to even out seasonal fluctuations in fat sheep prices. In particular, the decline in price from August to December is not so marked as formerly.<sup>6</sup>

Taken together, these factors have resulted in the marketing of as many sheep as possible in the shortest possible time before winter feeding becomes necessary. Thus, whereas approximately 40 per cent of the fat sheep supplies 40 years ago came in the form of hogs, only about 25 per cent are now fattened in this way.<sup>7</sup>

These changes to earlier marketing of fat sheep has had important implications for the store lamb and hogg trade. Most important, it has made differences in fattening rates amongst the various breeds more noticeable. In former times considerable numbers of lambs of all breeds were purposely kept on a low plane of nutrition, for a store period as it were, and sold in the spring as hogs when prices were higher. In most cases this is now done only of necessity and hence it has emphasized variations in maturing rates to a much greater degree. That these differences are considerable can be seen from Table 32, which is based on the same survey of 2,000 full-time farms used for Table 31. The full implications of the data shown in Table 32 will become apparent later; however, it is useful to consider the few main ones here. These are:-

- (1) Differences in maturing rates affect the types of feeding required and hence influence the movement of store lambs. In particular, the store lambs fattened before December are bought by farmers with "green" feed,



ie. grass, foggage, rape, sugar beet tops, whilst those fattened after December are bought by farmers with turnips (see also point 4, p. 211).

- (2) More rapid fattening has reduced the practice of marketing store lambs more than once. In particular it has reduced the practice of buying lambs, keeping them for a store period and selling them again as store hogs.

### C. Movement

#### Total Recorded

The estimated total of 1.32 million store lambs and hogs sold in Scotland during 1966 were marketed at 90 auction centres (Map 12). Data were gathered from 66 of these markets, which accounted for four fifths of the total movement. For each region except the South-West, over 90 per cent of the throughputs were recorded and in no case did the percentage for a particular breed fall below 70 per cent (Table 33). In the South-West Region, however, only about three fifths of the total were recorded. This was not a serious limitation except the Glasgow area and Dumfriesshire where most of the unrecorded centres were located.

#### Sellers and Buyers:-

About 90 per cent of the 1.32 million lambs and hogs marketed in Scotland during 1966 were sold by the farmers who bred them. The other 10 per cent were sold by (a) dealers who bought them at markets in one area and sold them shortly afterwards at markets in another area (b) farmers who bought them and kept them for resale after a period varying from several weeks to several months; in

particular by farmers who bought lambs and resold them as hoggs.

Buyers were separated into three main categories - farmers, dealers and grazier-slaughterers. Buyers classified as farmers bought and moved the lambs or hoggs directly to their farms and those classified as dealers sold the sheep shortly after purchasing them. Both these categories are in common use in farming circles, but the third category, grazier-slaughterers, is not. Farmers and auctioneers usually include grazier-slaughterers under the term dealer but their functions are essentially different and therefore they were treated as two distinct types. A full explanation of this third category of buyer will be given later. Here it is sufficient to note that buyers classified as grazier-slaughterers buy store and fat sheep in large numbers, slaughter all of the fat sheep and some of the store sheep immediately, and feed the remainder of the store sheep on their own farm (or farms) and on rented fields scattered over a wide area. A further point to note is that only the Scottish grazier-slaughterers could be positively identified. Their English counterparts are known to buy in Scotland and, indeed, some of them could be identified. But, more often than not, there was uncertainty as to whether the buyer was a dealer or grazier-slaughterer so the term dealer was used to include both types.

#### Tables

The same methods were used for tabulating the movement of feeding sheep as were used for breeding sheep. Tables 34-50 show the throughput by breed for lambs, hoggs and ewes for each market. For unrecorded markets only the total estimated throughput

is shown, but for the recorded markets the number bought by each category of English or Scottish buyer is given as well as the numbers bought by farmers in each county in Scotland. Further information on the distribution is given in Tables 51 and 52 which show the numbers by breed moved from each Scottish region to each county in England.

In addition there are numerous other tables showing estimated regional throughputs and distributions in numbers and percents. These estimates were calculated by raising the recorded information to include the throughputs of the markets not surveyed in detail.

### Maps

Maps were prepared to show in graphical form the same information given in numerical form in Tables 34-52. Maps 37 to 41 show individual market throughput by breed and types of buyer for lambs, and Maps 42 to 48 show the distribution of lambs by the grouped hinterland and grid square and dot methods (see pp. 70 - 71). However, as with breeding sheep, the distribution of feeding sheep within England was not mapped in this way because (a) English dealers' purchases were not traced to their ultimate destinations, (b) in any case, the movement from Scotland was only part of the total movement to and within England, so that the distributions, even if mapped, could not be properly explained. Within Scotland, too, maps were not prepared for all the movements shown in the tables. Specifically, there are no maps showing (a) the distribution of lambs to grazier-slaughterers, (b) the distributions of hogs and lambs sold with their mothers (see pp. 207-208). The distribution of lambs to grazier-slaughterers could not be mapped because they rent land over a wide area and, although the general or regional

locations of their rented fields were known, there was not sufficient information to use the method of grid squares. Hoggs and lambs sold with their mothers (that is, the movements from January to June) were not shown graphically because, although information was available to show the distribution to Scottish farmers on a grid square basis, time did not permit this to be mapped. This was not felt to be a serious limitation because these accounted for only about 10 per cent. of the total movement and, in any case, the distributions were shown in tabular form on a market and county basis (Tables 31 and 41 to 50).

#### MOVEMENT BY BREED AND REGION

##### A. Lambs - July to December

###### Supply and Movement to Markets

Seven eighths or 1.18 million of the 1.32 million feeding lambs and hoggs marketed in Scotland during 1966 were sold as lambs from July to December. Of these 1.18 million, .94 million or four fifths were recorded, the percentage recorded by breed and region being shown in Table 33. The general source areas for each breed, shown on Maps 42-48 and in Tables 33-38, have been examined previously in Chapters I and II and hence need no further explanation here. However, there are certain features of supply which do require further analysis, in particular the variations of type which exist amongst lambs of the same breed and also the patterns of marketing. These will now be examined, beginning with the Blackface breed.

Blackface Lambs

## Total Supply

Based on a variety of sources, including the number of subsidized hill ewes, regional lambing rates and market throughputs, the estimated output and disposal of Blackface lambs by region during 1966 were as follows:-

Region	Blackface Ewes (thousands)	Number of Lambs (thousands)			
		Total	Kept or sold for breeding	Home-Bred and fed	Sold as Stores for feeding
Highland	761	459	264	93	102
North-East	68	41	20	10	11
East-Central	320	213	95	54	64
South-East	196	160	70	57	33
South-West	563	490	177	95	218
Scotland	1,908	1,363	626	309	428

Differences in the estimated output of lambs arises, of course, from differences in lambing rates (Table 5). The proportion of lambs used for breeding would be different if only the hill ewes required replacing because ewe death rates differ regionally too. But, when the sale of ewe lambs for replacements for crossing flocks is taken into account, the proportion is about one third of the ewes bred in each region. Further differences arise because of the different proportions being home-bred and fed, in particular a much lower proportion are handled this way in the South-West Region. Hence in summary it can be said that:-



- (i) output of lambs per ewe bred is highest in the Southern Uplands (South-East and South-West Regions), followed by the east Highlands (East-Central and North-East Regions) and the west Highlands (Highland Region).
- (ii) this difference is maintained for feeding lambs because about the same proportion of lambs to ewes are kept or sold for breeding.
- (iii) the differences in (i) are increased as far as marketed stores are concerned because proportionately fewer lambs in the Southern Uplands are home-bred and fed.

This last difference is difficult to explain. It could, of course, arise in part from errors in estimated lambing and replacement rates. Also, as will be discussed below, it is partly due to the fact that some of the lambs marketed in the South-West Region came from the southern Highlands. However, these sources of error are probably not serious because a survey in which home-bred and marketed lambs were estimated without them gave the same general results.<sup>8</sup> Hence it would appear that, in fact, a lower proportion of the lambs are home-bred and fed in the Southern Uplands as opposed to the Highlands. Time did not permit full investigation of the reasons for this difference but a partial explanation will be given in later sections of this chapter.

### Types of Blackface Lambs

The Blackface breed was well established in the Southern Uplands by 1750 and it was introduced to the central and west Highlands during the following fifty years. Since that time some areal differentiation has taken place within the breed owing to differences in environment and management. These differences are similar in kind - size, weight, conformation - to those which have occurred within the Cheviot breed, but the degree of difference is less for the Blackfaces, so that separate breed names and breed societies have not arisen. However, appellations recognizing regional differences are in common use; moreover, the differences are important enough to influence the movement of each type.

Five main types of Blackface sheep are commonly recognized, namely the Lanark, Perth, Newton Stewart, Argyll and Lewis types. The Lanark and Newton Stewart types together hold sway in the Southern Uplands, the former type predominating everywhere excepting for Galloway and parts of Dumfries. The other three types stock the Highland and Islands. The Perth-type predominates in the east Highlands (east Perth, Angus, Aberdeen), the Argyll type in the west Highlands and Islands (Argyll, west Perth, north Stirling, west Inverness and the islands south of Lewis and Harris) and the Lewis-type on the island of Lewis and Harris. There are many differences amongst these types but, as far as store movement is concerned, the most important are the related factors of weight, hardiness and rate of maturity. Quantitative information is not available on these differences but it is generally recognized that the Perth-type is the largest and heaviest type, followed closely by the Lanark-type.

The Newton Stewart and Argyll types-types are considerably lighter<sup>9</sup> whilst the Lewis-type is the lightest. On the other hand, hardness tends to be graded in the opposite direction. These factors have never been investigated in detail but appear to stem from areal differences in the physical environment, including variations in soil, climate and grazings. Generally speaking, the better the environment the larger, heavier and less hardy the lambs, and these differences have arisen over the years through natural and controlled selection of the breeding stock. Different rates of maturity are also known to exist amongst the various types but these are more difficult to assess. At the outset there is the problem of what is meant by rate of maturity, e.g. liveweight gain per day (or other convenient period) and/or total time taken to reach the fat stage. If lambs are fed the same type and amount of feed it would appear that the liveweight gain per day would be approximately the same for all types. In other words, the smaller lambs would be expected to be ready for slaughter before the larger ones if both started at the same relative stage of maturity. On the basis of evidence to be more fully discussed later, this appears to be generally true in practice. Specifically, when moved off the hills to feeding farms, the Newton Stewart and Argyll types tend to fatten more quickly than the Perth and Lanark types. The exception is the Lewis-type which usually takes between one and a half to three and a half years to mature. This long period, however, is more a reflection of management than inherent characteristics, for it is a common practice in Lewis to keep the lambs on hill grazings, and poor quality ones at that, until they are fat. Yet, even excepting the Lewis type, there are other qualifications which must be made. For example, if two

batches of immature, i.e. not fully grown, lambs, one of the small type and one of the large type, were moved from the hills to be fed it is likely that the smaller one would be fed on a lower level of feed than the larger one. This is usually done because, if fed at the higher level, the smaller lamb would tend to lay on fat at the expense of further development of carcass size, conformation and lean meat. This factor could, and often does, tend to even out the total length of time required by the various types to reach maturity when moved off the hills for feeding. There are other important factors to consider such as "shifting" ability and stage of maturity of the lambs when moved off the hills, but these are more conveniently discussed in later sections of the chapter.

#### Movement to Market

An estimated total of 378,000 Blackface lambs were moved to 64 markets at 57 centres from August to December 1966 (Table 34). These centres are located in or near the areas where Blackface hill sheep are produced and from which supplies were drawn (compare Maps 1 and 37). Owing to the great deal of overlapping which occurs it was not possible to show the supply hinterland for each market individually but, as with breeding sheep, grouped regional market hinterlands were delimited.

In general, the markets within each particular region drew their supplies from farms within the same region (Map 42). An exception was the South-West Region where some of the larger markets drew supplies from adjacent regions as well. For example, Lanark and Biggar drew from farms in West and Mid Lothian and Peebles whilst Stirling drew from parts of west Perth and east Argyll. Even in

this extreme case, the vast majority of supplies came from within the region and, in any case, the South-West and South-East Regions were joined together for the purpose of analysing the movement to and from markets. Nevertheless the fact that some interchange between regions did take place is important because it undoubtedly led to some errors in the regional outputs shown in the tables which were based on the assumption that the markets in a region drew supplies only from that region (pp. 96 - 98).

The only other important features requiring comment apply to the Highland Region. As is shown by a comparison of Maps 1 and 42, this is the only region in which supplies were not drawn, in part at least, from the entire area where Blackface lambs were bred; specifically, no lambs were drawn from the island of Lewis and Harris. This arises for several interrelated reasons. It first of all stems from the fact that the Lewis type lambs are generally too small and of too poor a quality to market at the mainland markets. This situation has arisen through years of neglect of the breeding stocks on the part of the crofter; it is also due to the poor quality of the grazings and to the ravages of disease, in particular liver fluke. It is interesting to note that one writer at least regarded liver fluke infestation as the main reason for the lack of success and eventual discontinuance of previous attempts to sell Lewis Blackface lambs at mainland markets.<sup>10</sup> However, poor quality sheep stocks alone do not fully explain why none, or almost none, are sold as store lambs for feeding. Indeed, as will be discussed later, some poor quality Cheviot lambs from croft grazings are sold in this way. The additional factors are distance from store markets and the presence of a local population of consumers. Given the poor quality and



small size of the Lewis lambs and the resulting low prices which they would receive at the nearest mainland markets such as Oban or Inverness, transport costs are a deterrent to this method of disposal. On the other hand, there is a large population on the island itself and, through necessity or preference, they prefer two to four year old fat sheep to fat lambs. Taken together, all these factors have led to the present system whereby Lewis crofters keep their store lambs on rough or semi-improved hill grazings until they fatten as hogs or wethers. (p. 220).

If the size of the throughput is taken into account, the lines of movement to individual markets can usually be inferred because each market tends to draw on adjacent hill farms for its Blackface lamb supplies. Thus, Perth draws from the southern Grampians and Fife, Newton Stewart drawn on adjacent parts of the Southern Uplands and so on. This is generally true for the smaller markets in the Highland region but the lines of movement to the larger ones are not immediately obvious. In particular it may appear strange that Inverness market (MacDonald Fraser) and to a less extent the two Dingwall markets, draw supplies from the surrounding hill areas and also from as far west as Skye and North Uist, whilst Oban draws from the adjacent parts of the mainland as well as from all the western islands as far north as Uist but excluding Skye. These patterns are understandable, however, when the shipping routes between the islands and the mainland are considered.<sup>11</sup> Sheep from Lochmaddy in North Uist and from such ports as Uig, Portree and Kyleakin in Skye are shipped to Kyle from whence they go by road to Inverness and Dingwall. Similarly, but without the necessity for long distance road transport,

sheep are sent to Oban from such ports as Lochboisdale in South Uist, Tobermory, Craginure, Bunessan and Salen in Mull and Castlebay in Barra. The Glasgow markets, too, are known to receive some of their supplies by sea from such ports as Rothesay and Brodick, but the full extent of their trade is not known because neither of these markets was recorded (Map 37 and Table 34).

A final point to note regarding the movement of Blackface lambs to market is that very few are transferred from one market to another by dealers (Table 53). This unimportance of dealers stems from the fact that the original process of concentration, as has been discussed for the Highland Region, brings the lambs within easy access of the feeders.

#### Cheviot and Zetland Lambs

##### Total Supply

An estimated total of 420,000 Cheviot and Zetland lambs were produced during 1966 from 493,000 subsidized breeding ewes. Of these lambs, 177,000 were kept or sold for breeding, 74,000 were home bred and fed and the remaining 169,000 were marketed as lambs or hogs for feeding. Taking each breed separately, the following estimates can be made:-

Breed	Number of Subsidized Ewes (thousands)	Lambs Bred (thousands)			
		Total	For Breeding	For Feeding	
				Home-Bred and fed	Sold as Stores
Cheviot	401	355	142	49	164
Zetland	93	65	35	25	5
Total	494	420	177	74	169

This, however, is not the complete picture because a further 27,000 Cheviot lambs for feeding were marketed from an unknown number of "mixed" hill-subsidized (Map 1) and non hill-subsidized Cheviot flocks.

These figures are, of course, only estimates and, moreover, are for one year only. However, they do appear, when taken on the broad scale, to show known characteristics of the Cheviot and Zetland breeds and are useful for making comparisons between these and the Blackface breed. In particular, they show that in proportion to ewes bred a far greater number of Cheviot than Blackface lambs are sold for feeding ( p. 217). This contrast is due in part to higher lambing rates for the Cheviot breed but is mainly due to a much smaller proportion of the Cheviots being home-bred and fed. This difference will be discussed more fully later but is basically due to the slower maturing rate of the Cheviot breed which means that fewer of them can be graded fat off their mothers from hill grazings. The Zetland lambs, on the other hand, are almost all home-bred and fed. This pattern of disposal reflects the associated features of poor grazings, poor quality breeding stock, ownership of these stocks by crofters and isolation from the mainland. Taken together these factors have led to a pattern of disposal of feeding sheep resembling that arising for similar reasons on Lewis and Harris, namely, the practice of maintaining the lambs on rough grazings for a considerable length of time before they are sold fat rather than attempting to sell them as stores.

### Types of Cheviots

Various types of Cheviots have arisen since the spread of the breed from its original home in the Cheviot hills. The development of the two main types, the North and South Country Cheviots, has already been discussed and for many years each has had its own breed society. However, within these two main types there are important variations or sub-types which, although differing in many respects commonly known within farming circles, have not been given official recognition. At this point it is convenient to examine all these official and unofficial types because, as will become apparent later, the differences amongst them ultimately lead to different patterns of movement.

North Country Cheviots:- North Country Cheviots are larger in size and heavier in carcase weight and fleece than South Country Cheviots. In north Scotland there are three main sub-types (i) the park-type (ii) the Sutherland-type (iii) the croft type. The park-type is not kept on hill grazings all year round but rather is maintained for part of the year on in-bye grass fields or parks. It is the largest and heaviest of the North Country types in north Scotland and is found mainly on the uplands of Caithness where it is kept in pure-bred or partially crossed flocks. A few flocks of this type are also found in Easter Ross. The Sutherland-type is kept all year on hill grazings and is intermediate in size and weight between the park- and croft-types.<sup>12</sup> It is found on the large farms and estates of Sutherland and adjacent parts of Ross and Cromarty and Caithness. The croft-type, as its name implies, is kept on crofts rather than farms. The crofters themselves live on the coastal fringes but the sheep

flocks are kept for most of the year on rough grazings which extend inland and upslope from the coast. As these grazings are similar in type to those on the larger farms and estates, it is not the reason for the smaller size and poorer quality of the crofters' sheep. Rather, it is differences in organisation and management - emphasis on sheep, size of flock, away-wintering of ewe hoggs and leaving gimmers eild - which largely explain the emergence of the two types (see Chapter I). Taken together, the result of these has been that over the years the crofters' breeding stocks have tended to deteriorate. In consequence, lambing rates too have declined and further limit the scope for selection of breeding replacements. Moreover, in some cases the original crofters' flocks, when established 100 to 150 years ago, comprised shotts, i.e. rejects from the larger farms and estates.<sup>13</sup>

North Country Cheviots in south Scotland are usually larger and heavier than even the park-types of the north. This is so because the North Country Cheviot in south Scotland is kept for all or most of the year on in-bye fields (p. 25).

South Country Cheviots:- In both north and south Scotland South Country Cheviot flocks are kept all year on rough grazings. Northern sheep tend to be smaller, lighter and of poorer quality than those in the south, a reflection of differences in quality of grazings and of management. The main difference in management is that a large proportion of the northern South Country Cheviots are in small flocks owned by crofters but those in the south are managed by farmers in large flocks. This difference has had results similar to those for the Sutherland-and croft-type North Country Cheviots.



### Movement to Markets

Some 191,000 Cheviot lambs for feeding were marketed at 39 markets (34 centres) during 1966 (Tables 35 and 53 and Map 38). 83 per cent of these were recorded, 95 or more per cent having been surveyed in all regions excepting the South-West where the omission of Annan and Thornhill brought the percentage down to 35 (Tables 33 and 35).

In both north and south Scotland some supplies were drawn from all the main Cheviot breeding areas (compare Maps 7, 38 and 43). This contrasts with Blackface lamb supplies which, as discussed on pp. 222-223, are not drawn from all the breeding areas.

In north Scotland, 22 markets handled a total throughput of 98,000 lambs. Although each market's supplies consisted of several of the types mentioned in the previous section, the throughput in most cases was predominantly of one type. Thus, the main bulk of the park-type North Country Cheviots were sold at Thurso, Wick, Latheronwheel, and Lybster, the hill-type at Lairg and Dingwall and the croft type at Forsinard, Helmsdale, Rogart, Brora, Rhiconich and Kinbrace. Inverness handled most of the South Country Cheviots, but some of them were also marketed at Dingwall.

In south Scotland, 15 markets handled a total supply of 89,000 but only 57,000 of these were sold at recorded markets. The pattern of marketing was somewhat more complicated than in north Scotland for several reasons. First, the three Edinburgh markets drew all their supplies from north Scotland, these having been transferred south by dealers. Dealers' lambs from the north also formed part of the supply at Annan, an unrecorded market. The exact

number of these was not known but probably totalled less than 2,000. Another complicating feature of the marketing pattern was that both South and North Country Cheviots were sold at each market but in most cases these were not separately identified. The different types were not identified in north Scotland either but there the types were more clearly differentiated areally, so that supplies tended to be of the one type. However, in south Scotland the two main types are produced in close proximity, the South Country on the hills and the North Country on the adjacent uplands, and both are marketed at the same centres such as Hawick, Lockerbie and Reston.

Some, 5,000 Zetland and Zetland cross lambs were marketed during 1966. All of these were produced on Zetland but only 3,000 were sold at Lerwick. The other 2,000 were sent by sea to Kittybrewster (Aberdeen) either by direct consignment from farmers in Zetland or by dealers who purchased them from farmers or at Lerwick market.

#### Greyface Lambs

##### Total Supply

An estimated total of 613,000 Greyface lambs were bred in Scotland during 1966. Of these, about 45,000 were kept for breeding and 568,000 were fed. (Table 55). Of these, 232,000 were home-bred and fed and 336,000 were sold for feeding. Of the latter, 293,000 were marketed as lambs between August and December. These lambs were sold at 67 markets, of which 44 handling about three quarters of the total were recorded (Map 39 and Tables 33 and 36). Some 87 per cent of the estimated total marketed lambs were sold in the North-East, East-Central, and South-West Regions, a reflection of the concentration

of regular and flying crossing flocks of Blackface ewes in these regions (compare Maps 6 and 39).

#### Types of Greyface Lambs

There are variations amongst Greyface lambs depending upon the type of Blackface ewes from which they were bred, but these differences are not as pronounced as they were for Blackface and Cheviot lambs. As far as Greyface lambs produced from upland regular flocks are concerned, the differences are minimized because, as shown in the previous chapter, most of these flocks are derived from the Lanark and Perth-type Blackfaces. Then, too, differences in the lambs produced from cast ewes tend to be minimized because most of these are bred under lowland conditions where methods of feeding can, and do, tend to be more important in the final analysis than any slight differences in hereditary characteristics. There is, however, an important distinction between Greyface lambs bred in upland regular flocks and those bred in lowland flying flocks, namely, the upland bred lambs are usually somewhat more hardy or thrifty than the lowland bred. In farming terms, they are said to "shift" or "thrive" better when moved to lowland feeding farms. This, of course, is to be expected because the contrast in environments is greater for the upland lambs. This difference is one of degree rather than kind, however, because similar benefits are achieved by moving semi-upland or lowland-bred Greyface lambs to even better lowland farms and/or by putting them on different or better feeds than they were on prior to purchase.

### Movement to Markets

Farmers in each producing area send their Greyface lambs to nearby or local markets, the hinterlands and throughputs of each market being larger or smaller depending upon the established marketing patterns and hierarchy of markets within the area. There are, of course, some exceptions; for example, one farmer in the island of Lismore has for many years sent his Greyface lambs to Perth. But such long-distance movements by-passing more accessible centres (in this case Oban or Stirling) are very uncommon on the broad scale. There were, however, about 10,000 lambs moved amongst markets by dealers. Dealers bought about 1,000 lambs at Campbeltown and Islay and sold them at Glasgow and other dealers bought 9,000 at Cabrach, Tomintoul, Aboyne, Huntly and Kittybrewster and sold them at Perth and other southern markets. Unfortunately, these supplies could not be traced in detail, in the first case because Glasgow was not recorded and in the second because of a certain amount of rivalry amongst competing dealers. This rivalry and consequent secrecy was also present amongst dealers supplying the Edinburgh markets but since all the supplies sold there at certain times of the year were known to be from dealers the complete picture could be established. However, at Perth and other markets, dealers' supplies form only a small percentage of the total throughput and so could not be traced.

Detailed information was not available concerning the type of flock in which the Greyface lambs were bred. However, on the basis of the known distribution of these flocks and from additional information supplied by auctioneers it can be said that in the South-

West and East-Central Regions supplies from regular and flying flocks were about equal in number. In contrast, supplies at the Aberdeen markets, in particular at Huntly, Tomintoul, Cabrach, Aboyne and Alford, were mainly from upland regular flocks. As will be discussed more fully later, this was an important factor in the transfer of some of these lambs southwards.

### Half-Bred Lambs

#### Total Supply

An estimated total of 240,000 Half-Bred lambs were bred in Scotland during 1966. Of these, approximately 100,000 were kept or sold for breeding, 52,000 were home-fed and 88,000 were sold for feeding through the auction markets. The proportion used for breeding contrasts sharply with the Greyface breed, the reason being, of course, that Half-Bred flocks are much more popular for producing Down-Cross lambs under lowland arable conditions.

Of the 88,000 in total sold for feeding, 78,000 were marketed at 29 centres between August and December (Map 40). Although 72 per cent of these were traced, only 20 per cent of the 22,000 sold in the South-West were recorded (Table 33). This low proportion reflects the concentration of Half-Bred lamb production in Dumfriesshire and the sale of these at the unrecorded markets of Annan and Thornhill (Map 40).

#### Types of Half-Bred Lambs

Half-Bred lambs are broadly similar in type throughout Scotland. This arises because most of them are bred in regular flocks and these



regular flocks are mainly of the North Country Cheviot type which tend to be similar. Specifically most of the Half-Bred lambs are produced from the larger varieties of Cheviot, that is, the Caithness, Sutherland and south of Scotland types. The only commonly recognized difference affecting movement is that the Half-Bred lambs from the far north appear to be somewhat more hardy or thrifty than those bred elsewhere but this is by no means always the case.

#### Movement to Markets

As with the breeds previously discussed, most markets receive their supplies from local farms. However, as with Cheviot lambs, the three Edinburgh markets receive their supplies (total 6,200) from north of Scotland markets via dealers. In addition, the Caithness Livestock Breeders (pp. 178-181) bought 1,700 and sent them directly to farms in Roxburgh and Berwick (Table 37).

#### Down-Cross Lambs

##### Total Supply

About 1.05 million Down-Cross lambs were produced during 1966 and most of them were fed rather than bred. An estimated 732,000 were home-fed and 263,000 were sold for feeding, 220,000 of these being marketed at 39 centres between July and December (Map 41 and Tables 38 and 53). In the South-West Region only about one third of the total estimated throughput was traced, but in all the other regions over 95 per cent was recorded (Table 33).

##### Types of Down-Cross Lambs

Down-Cross lambs in Scotland are produced from Half-Bred, Greyface and Cheviot ewes and these are usually mated with Suffolk

Down rams (p. 32). These various types are not separately identified in auction records but it would appear that, as far as stores are concerned, about three quarters of the total are Suffolk Cross Half-Bred lambs, with the other two types accounting for about equal proportions of the remainder. In the South-East Region, which accounted for 58 per cent of the total during 1966, almost all were out of Half-Bred ewes, but in the other regions supplies were about equally divided amongst the three types.

#### Movement to Markets

In most cases, Down-Cross lambs moved very short distances from farms to markets within the lowland areas where they were born. However, there were two important exceptions to this pattern. One involved the import of 4,000 Down-Cross and similar types of lambs (Dorset, Hampshire, Oxford, Romney Marsh, Southdown, Ryedale and North Country Cheviot rams mated with various breeds of ewes) from Kent by one of the Edinburgh markets. This trade has only been established for several years and is made profitable by (a) a glut of feeding lambs in Kent, with consequent low prices, for a short period in the autumn, (b) the lorry waggons which bring the lambs from England return with fat sheep from Edinburgh, i.e. thereby reducing total transport costs. A second exception is that the Edinburgh markets received a total of about 3,000 dealers' lambs from markets in Aberdeenshire. These two sources of supply accounted for almost all the Down-Cross lambs sold at Edinburgh (Table 38).

### Distribution from Markets

In the preceding section, the numbers, breeds and types of feeding sheep sold from July to December of 1966 were examined and the movement of these to markets were traced. It is the purpose of this section to analyse the distribution of these lambs to the farms where they were fed. Some of the general features of this distribution were examined earlier in this chapter and can be summarised as follows:-

- (1) An estimated 3.72 million lambs were bred in Scotland during 1966 and of these 1 million were kept or sold for breeding and 2.72 million were fed. 1.4 million were fed on the farms where they were born and 1.32 million were sold through the auction markets. Of these 1.32 million, 1.2 million were sold as lambs between July and December and the other .12 million were sold as (a) hoggs, (b) lambs with their mothers (ewes with lambs at foot) between January and June. It is the 1.2 million sold between July and December which are being examined in the section.
- (2) Four fifths of the 1.2 million lambs sold between July and December were recorded at various market centres throughout Scotland.
- (3) These lambs were bought by different types of buyers. Purchasers in Scotland were divided into three groups, dealers, farmers and grazier-slaughterers and purchasers from England were divided into farmers and dealers, the latter group including some grazier-slaughterers.

- (4) Lambs bought by Scottish farmers at the auction markets from breeders or from dealers were traced to the farms where they were fed. This information formed the basis for a series of maps and tables showing the distribution by number and breed.
- (5) Some of the lambs bought by Scottish grazier-slaughterers were distributed to and fed on their own farm(s) but most were fed on fields rented over an extensive area. These rented fields were not listed in the auction records, hence the distribution could not be mapped and tabulated in the same manner as it was for Scottish farmers' purchases. However, on the basis of interviews with the grazier-slaughterers themselves, the numbers fed by them in each region were tabulated.
- (6) The distribution of lambs within England was tabulated on a county basis. In the case of English farmers this was done by locating their farms but for English dealers it was done on the basis of the county in which they lived. This method undoubtedly gave rise to some errors because some of the dealers' lambs would have been eventually moved to farms outwith their county of residence. However, interviews with some of the more important dealers and with agricultural advisers in England suggested that the distributions tabulated were accurate, if not on a county basis, at least on a regional basis.

### Movement Within Scotland

#### 1. Distribution to Grazier-Slaughterers

##### Introduction

Buyers classified as grazier-slaughterers purchase fat and store sheep on a large scale, slaughter the fat and some of the stores immediately and feed and remaining stores on owned and rented fields (p. 214). Buyers of this type have existed in Scotland since the last quarter of the 19th century and owe their origin to several related developments which took place at that time. First, there arose a demand in the growing urban centres, in particular London and the north of England, for large quantities of fat sheep. This demand grew so large that supplies of fat lambs from New Zealand, Australia and the Argentine<sup>14</sup> began to be imported and came in the largest numbers from January to July. This had two important consequences for British suppliers. First, it accelerated the trend in public demand, particularly in the urban centres, towards leaner and lighter fat sheep.<sup>15</sup> To meet this demand, the fattening process had to be reduced from 2-4 years to less than 1½ years, that is, the wether system gave way to the production of fat lambs and hogs (p. 10). Second, the peak demand for home-bred and fed supplies became concentrated in the period from August to January. These two related changes, the demand for lighter, leaner fat sheep and the peak demand period from August to January for British born sheep, were, and still are, not universal but rather were confined mainly to the large urban centres in England. In any case, to meet this demand there arose a number of wholesale butchers who bought fat lambs over a wide area and supplied these to retail butchers in cities such as London, Manchester and Liverpool. Scottish buyers



met part of this demand; in particular there arose a concentration of the export trades in south Scotland in centres such as Racks, Lockerbie, Eastriggs, Broughton, Biggar, Symington and Hawick.<sup>16</sup> The trade developed here because it was the closest surplus supply area in Scotland to the English markets. Of course, all this was only made possible by the development and extension of the railway network, and these supply centres were all located on the main lines leading south of the Border.

The export trade was well established in south Scotland by the end of the 19th century. At first it appears that the suppliers dealt only in fat sheep but gradually some of them branched out into the buying and fattening of store sheep as well. This practice became quite common for various reasons. First, it provided the wholesale butcher with a reserve supply which could be fattened to meet the fluctuating demands of the fat sheep trade. Thus, if for one reason or another there was a shortage of fat sheep he would have on hand a supply of store sheep which could be rapidly finished to meet this demand. Similarly, if there was a surplus of fat sheep, he could cut back his purchases of fat sheep and maintain his stores on a lower plane of feeding and wait until demand rose. In other words, the maintenance of both store and fat sheep allowed him to capitalize on changes of prices arising out of fluctuations in supply and demand. Another important element of flexibility in this system arose as the wholesale butchers became more familiar with the store trade. They discovered that a certain percentage of the lambs sold as stores for further feeding were acceptable as fat if slaughtered immediately; hence, if necessary such lambs could be bought when the regular fat supplies were insufficient to meet prevailing demand.

It is, then, the wholesale butcher who buys store as well as fat sheep who has been termed grazier-slaughterer for the purpose of this study. There are about twenty such businesses in Scotland at the present time and, with few exceptions, the following features are common to all of them:-

- (1) They are located, as in the past, in south Scotland.
- (2) They are closely knit businesses involving a single buyer (with clerical staff) or a number of buyers who are closely related, i.e. fathers, sons, uncles.
- (3) They feed their store sheep on fields rented from other farmers.
- (4) They have their own slaughtering facilities and ship by road to retailers or wholesalers in England, in particular London, Manchester and Liverpool and, more recently, to markets on the Continent.

This discussion is essential to an understanding of the role of grazier-slaughterers in the present day store movement. Its relevance will become apparent in the analysis of this movement which follows below.

#### Supply of Stores

Consumers in the main centres to which grazier-slaughterers send their sheep favour lean lambs in the range of 32 to 48 pounds dead weight, the preference being for lambs towards the lighter end of this range. Under normal conditions of breeding and feeding the Scottish hill breeds are most commonly in this weight range followed by the upland and then the lowland breeds.<sup>17</sup> However, there is another essential factor to consider, namely the rates of

maturity of the various breeds. The markets which grazier-slaughterers supply are affected, more so than other United Kingdom markets, by imported supplies from New Zealand and elsewhere in the Antipodes. Because of this, the period of greatest demand for home-fed lambs lasts from about August to January. This is not to say that grazier-slaughterers do not supply some sheep in other periods; in fact, they make purchases of fat and store lambs and hogs all year round. But, it does mean that the bulk of their supplies are concentrated in the August to January period. As far as stores alone are concerned, this has the consequence that, allowing for at least several weeks but often a considerably longer period for fattening, the main purchases are made from August to December. During 1966, for example, 184,000 of the 249,000 stores purchased by grazier-slaughterers were bought during this period, although this in itself means little because most stores are bought during this period regardless of the type of buyer (pp. 207-208, Table 55). But the essential difference is that grazier-slaughterers must buy the faster maturing types of lambs, that is, lambs which will be fat by the end of January if possible. Very little information is available on the rates of fattening of the various Scottish breeds, but an indication of them is given in Table 32. As shown there, of the lambs purchased as stores, about 90 per cent of the Blackfaces were fattened by February followed by the Half-Breds (76 per cent), Down-Crosses (68 per cent), Greyfaces (59 per cent) and Cheviots (13 per cent). These figures are, of course, a sample and are for one year only but they appear, taken together with known characteristics of the breeds, to be reasonably accurate. A more serious limitation is that they apply

to a sample of farmers rather than grazier-slaughterers. It is probable that a greater proportion of the stores bought by grazier-slaughterers would be fattened before February for all breeds but that the same relative rates would hold true.

Thus, the most suitable store lambs for the grazier-slaughterer trade are those which fatten (a) in the 32 to 48 pound dead weight range, (b) in the period August to January. Condition (a) alone is fulfilled most commonly by the Blackface and Cheviot hill breeds but condition (b) rules out the great majority of the Cheviots because of their slow rate of maturity. A considerable proportion of both the Half-Bred and Greyface or upland breeds are fattened by February but many of them, in particular the Half-Breds, are too heavy. Similarly, a large proportion of the Down-Crosses mature by February but most of them are above 48 pounds dead weight. However, this depends to a large extent on the ewe used, Down-Crosses out of Country Cheviot and Greyface ewes being much more likely to be within the required weight range than crosses out of Half-Bred or North Country Cheviot ewes.

The most important points made in the discussion above are illustrated by the following figures which show grazier-slaughterers' purchases of store lambs from July to December as compared with total supplies available:-

Breed	Store Lambs for Feeding marketed from July to December		Purchased by Grazier-Slaughterers	
	Numbers (Thousands)	Percentage of total	Numbers (Thousands)	Percentage of total
Blackface	378	32	120.0	65.0
Cheviot	195	17	7.5	4.5
Half-Bred	78	7	2.4	1.5
Greyface	293	25	39.4	21.0
Down-Cross	220	19	14.5	8.0
Total	1,164	100	183.8	100.0

#### Sequence of Supplies

On the basis of past experience and established outlets, grazier-slaughterers know before the beginning of the feeding season the approximate number of fat and store lambs they will need to purchase in the autumn months. Working on this basis, before the main feeding season they rent the amount and types of feed they will require to finish the store lambs they expect to purchase. As a general rule, the markets they supply require about equal numbers of fat lambs and hoggs from August through to the end of January, after which home-bred supplies decline and imported supplies rise. To meet this demand, it would appear that from August to January, the ratio of fat lambs slaughtered immediately to store lambs fattened on rented fields is approximately constant in the grazier-slaughterer's supplies. That is, grazier-slaughterers attempt to finish about the same number of stores each month throughout the peak period of demand. This does not necessarily mean that



they buy the same number of stores each month, however, because there is often a carry-over of varying proportions from one month to the next depending upon the breeds and type of sheep and feed available. Nevertheless, grazier-slaughterers' purchase of stores do tend to be more evenly distributed throughout the season than farmers' purchases since the latter do not have regular quotas or orders to fulfill (see also p. 212). This difference in sequence of purchases is illustrated in Table 53. Thus, for example, whereas Scottish farmers purchased 167,000 Blackface lambs during August and September and only 31,000 from October to December, grazier-slaughterers purchased 60,000 in August and September and 59,000 from October to December. Or, to take another example, whereas Scottish farmers purchased 174,000 Greyface lambs in August and September and 51,000 from October to December, grazier-slaughterers purchased 22,000 and 17,000 in the same two periods. This means, of course, that as the season progresses, grazier-slaughterers take an increasing proportion of total stores available (Table 53). It can also be seen from Table 53 that the proportion going to grazier-slaughterers continues at a high level after December but most of these are not fattened until after February and will be discussed later in section dealing with the movement of store hogs. In other words, allowing for a period of finishing, the orders up to February are fulfilled, as far as stores are concerned, by purchases made as lambs up to the end of December.

There is another reason, implied but not specifically mentioned in this discussion, for the greater regularity of grazier-slaughterers' purchases of store lambs throughout the autumn, namely that grazier-slaughterers tend to buy advanced or mature stores which can be finished rapidly.

Thus, whereas a farmer may buy all his supplies as immature stores in September and finish them in the following three to four months, a grazier-slaughterer will usually buy mature stores to finish in eight weeks or less. This difference arises for various reasons, the most important of which is that the grazier slaughterer, more so than most farmers, depends on a rapid turnover with small profit margins per head for his livelihood. As one grazier-slaughterer explained (paraphrased) "It is more profitable for me to let farmers put weight on the stores up to a certain quite advanced level after which it is more profitable for me to finish them quickly on my rented fields".

#### Markets and Movement

Since the early days of the trade and continuing to the present time, the residences of wholesale butchers supplying the English markets have been in south Scotland. The original reasons for this general location were (a) fat sheep of the types desired were available locally in large numbers, (b) this area had a relative advantage compared with other potential supply areas in Scotland in that distances were shorter to the main outlets in England. These two factors are still important but since the branching out of some wholesale butchers into the store sheep trade other factors, too, have consolidated this locational advantage. These other factors will become apparent in the discussion of markets, movement and feeding of stores which follows.

Although little or no written evidence is available, on the basis of interviews it would appear that when wholesale butchers in south Scotland began buying stores they did so in a small way at first. During this early period they were able to purchase the

desired types, that is, Blackface and Greyface lambs (See p. 242), at local markets such as Castle Douglas, Newton Stewart, Thornhill, Ayr, Lanark and Stirling. However, as the trade expanded, some of them began to go further afield in search of supplies, to centres such as oban and Dalmally in the west Highlands and Perth and Aboyne in the east Highlands. In view of this wider hinterland it might be expected that similar types of wholesale butchers cum grazier-slaughterers businesses would have grown up in other areas. This was not the case, however, for several related reasons, the most important of which were; (1) the early established businesses in south Scotland tended to continue in operation, usually passing from father to son, an important factor in view of the experience necessary to operate in this very highly competitive trade, (2) the locational advantage in terms of maximum supplies within the shortest distance still favoured the south both in terms of fat and store sheep, (3) related to (2) was the fact that feed of the required types to finish the lambs was more readily available in the south. This was particularly true of the South-West where there was an abundance of grass and rape, the most suitable feeds for rapid finishing of Blackface and Greyface lambs in the period required and at the desired weights (Maps 32, 33 and 36).

The general pattern described above has continued to the present day. With the exception of three very small businesses, all the others (18), accounting for well over 90 per cent of the total purchases, are located in the South-West Region. Furthermore, fourteen of these eighteen buy only in the South-West and, it is only the other four which cover a wide area from north England to Zetland.

The markets at which grazier-slaughterers made their purchases of store lambs between July and December of 1966 and the proportion these purchases were to the total throughput are shown for each breed and region in Tables 34 to 38 and 53 and on Maps 37 to 41. This information was relatively easy to obtain once the grazier-slaughterers were separately identified with the help of the auctioneers. Attempts to trace the movement of these lambs were much more difficult. The main problem was that the grazier-slaughterers' name and home residence were given but no information was available as to where the lambs were being sent. This problem arose, of course, because the lambs were sent to rented fields or, if considered fat, they were sent directly to a slaughter-house. Moreover, such is the competitiveness of this trade, that most of the grazier-slaughterers, when approached, were very reticent about the distribution of their purchases. Indeed, great care had to be taken not to let them know that any precise information at all had been made available regarding their purchases. Notwithstanding these difficulties, it was possible from various alternative sources to obtain a rough estimate of the disposal of their store lambs.

The three small businesses located aoutwith the South-West region (p. 245) are all in Aberdeenshire. Together they bought 2,000 Blackface lambs at Inverness, Fort William and Grantown-on-Spey, 500 Greyface lambs at Huntly and Inverness, 1,000 Cheviot lambs at Dingwall, 800 Half-Bred lambs at Dingwall and Thurso and 100 Down-Cross lambs at Inverness. Of these, about half the Blackface and one third of the Greyface lambs were slaughtered

immediately in Aberdeenshire and the rest were all fed on rented fields in that county.

The other eighteen grazier-slaughterers, reside in the South-West Region. Fourteen of them live in the Galloway - Dumfries area and purchase only at markets in that area, that is, at Ayr, Stranraer, Barrhill, Newton Stewart, Lockerbie, Newcastleton and presumably also at Thornhill and Annan (unrecorded). During 1966, they bought the following numbers of store lambs at the recorded markets: Blackface - 14,000, Greyface - 13,000, Cheviot - 500, Half-Bred - 200 and Down-Cross - 2,000. Approximately similar proportions of the Blackface and Greyface lambs were slaughtered as in Aberdeenshire and all the others were fed on rented fields in Galloway and Dumfries. Two of the remaining four grazier-slaughterer businesses are located in the Stirling area. These two bought at Tiree, Oban, Dalmally, Lochgilphead and Fort William in the west Highlands and at Stirling, Perth, Aberfeldy, Crieff and Grantown-on-Spey in the west Highlands. The totals by breed bought were:

Blackface - 17,000, Greyface - 3,000. Down-Cross - 300.

Again, about one third to one half of the Blackfaces and Greyfaces were slaughtered immediately and the rest were fed in the Stirling area.

The other two buyers are also located in the South-West Region and bought at most of the above listed markets as well as at Brodick, Lerwick, Cupar, Milnathort, Peebles, Biggar, Lanark, Kirriemuir, Forfar, Tomintoul, Cabrach, Blairgowrie, Ballindalloch, St. Boswells, Reston, Hawick and Edinburgh and even at several markets in north England, e.g. Bellingham. They are both very large businesses and split almost evenly the remaining purchases which were as follows:-



87,000 Blackface, 22,000 Greyface, 12,000 Down-Cross, 6,000 Cheviot and Zetland, and 1,500 Half-Bred lambs. In other words, these two businesses accounted for about two thirds of the total handled by grazier-slaughterers (p. 242). About half of the Blackface and Greyface and a quarter of the Down-Crosses were slaughtered immediately and the others along with the Half-Breds, Cheviots and Zetlands were fed on their own farms and rented fields, the latter being located in the South-West, South-East and East-Central Regions.

Fortunately, one of the two last mentioned grazier-slaughterers provided somewhat more detailed information than could be elicited from the others. Examination of his purchases and feeding practices is very instructive because they include almost every type of situation which would be encountered in any of the other businesses.

The grazier-slaughterer who did co-operate was a Mr. John Jackson, residing at Symington near Biggar in Lanarkshire. The business was established in 1880 at Symington adjacent to the main railway link running south to markets in England. In the early days fat lambs and hogs were purchased from local markets, slaughtered in Symington and sent south by rail. Since then several changes have occurred, including branching out into the store sheep trade, shipping by road rather than by rail and the

building of a private slaughter house. However, the business has remained within the Jackson family and is now directed by this Mr John Jackson and two other near relatives, also Jacksons.

In recent years, the normal number of lambs and hogs slaughtered has been about 200,000, of which about a third to a half are bought as stores. Purchases of store lambs during 1966, which was a typical year, are shown below (p. 250) for recorded markets. At this point only the purchases of store lambs (July to December) will be discussed and the hogs will be examined in a following section.

Blackface lambs are, as for all grazier-slaughterer purchases (see p. 242), by far the most important type. Of the 39,000 bought during 1966 about half were slaughtered immediately, but the proportions varied from area to area. About two thirds of the lambs bought at the west Highland markets of Oban, Dalmally and Inverness and one half of the lambs purchased elsewhere were slaughtered immediately. The higher proportion slaughtered from the west Highlands reflects the tendency for the smaller lambs of this area to be more mature when removed from hill grazings for sale as stores than the larger Perth and Lanark types which are the predominant types at the other markets (pp. 219-220). This is not to say that all the lambs sold as stores in west Highlands from August to December are more mature than the Perth and Lanark types.

Breeds and Markets	Numbers bought by Month (000's)												Totals		
	J	A	S	O	N	D	J	F	M	A	M	J	Lambs July- Dec.	Hoggs Jan- June	Year
BLACKFACE															
Dban		2.0	3.0	1.0									6.0	-	6.0
Dalmally		.2	1.2	.5									1.9	-	1.9
Inverness			2.0	1.5	1.6	2.3	1.1	1.3	.1	.7			7.4	3.2	10.6
Tomintoul			.2										.2	-	.2
Grantown-on-Spey					1.4								1.4	-	1.4
Aboyne				2.0									2.0	-	2.0
Kirriemuir		.1											.1	-	.1
Forfar							.1						-	.1	.1
Aberfeldy				.2	.1		.7						.3	.7	1.0
Blairgowrie		.3											.3	-	.3
Perth		.6	1.9	4.6	4.7	2.0	1.5	.8	1.4	.7	.1	.1	13.8	4.6	18.4
Lanark		1.9	.4	.2						.6			2.5	.6	3.1
Stirling		.7	.3		1.0	.8	.3	.4					2.8	.7	3.5
Peebles		.4											.4	-	.4
St. Boswells					.04		.05		.05				.1	.1	.2
Total		6.2	9.0	10.0	8.9	5.1	3.8	2.5	1.5	2.0	.1	.1	39.2	10.0	49.2
GREYFACE															
Dban		.5	1.0	.1	.1								1.7	-	1.7
Dalmally		.1											.1	-	.1
Inverness		.2	.4	.1	.1	.2			.7	.5			1.0	1.2	2.2
Ballindalloch			.2										.2	-	.2
Cabrach			.2										.2	-	.2
Aboyne			.5										.5	-	.5
Alford		.2											.2	-	.2
Blairgowrie		.3											.3	-	.3
Perth		.3	.6	1.9	1.5	.5	1.3	1.2	1.3	1.3	.1	.1	4.8	5.3	10.1
Cupar		.1											.1	-	.1
Milnathort		.2											.2	-	.2
Lanark		.1	.1	.1									.3	-	.3
Stirling		.2	.1										.3	-	.3
Peebles		.1											.1	-	.1
St. Boswells					.1		.1	.1					.1	-	.1
Total		2.3	3.1	2.2	1.8	.7	1.4	1.3	2.0	1.8	.1	.1	10.1	6.7	16.8
CHEVIOT															
Inverness				.3	.9	.2	.1	.2	3.2	.6			1.2	4.1	5.3
Perth			.1	.1	.1				.3				.3	.3	.6
Peebles		.1											.1	-	.1
St. Boswells							.1	.1					-	.2	.2
Total		.1	.1	.4	1.0	.2	.2	.3	3.5	.6			1.6	4.6	6.2
HALF-BRED															
Perth			.1	.1	.2	.2	.1	.1	.2	.1			.6	.5	1.1
Forfar							.1						-	.1	.1
Lanark				.1									.1	-	.1
Peebles		.1											.1	-	.1
St. Boswells					.1		.1	.1					.1	.2	.3
Total		.1	.1	.2	.3	.2	.3	.2	.2	.1			.9	.8	1.7
DOWN-CROSS															
Dban		.2	.2										.4	-	.4
Dalmally		.1											.1	-	.1
Inverness			.1	.1	.1		.1		.3	.2			.3	.6	.9
Perth		.1	.4	.1	.8	.3	.2	.1	.2	.1			1.7	.6	2.3
Cupar		.3											.3	-	.3
Lanark		.1		.1									.2	-	.2
Peebles		.2											.2	-	.2
St. Boswells	.2					.7	1.3	.3	.2				.9	1.8	2.7
Total	.2	1.0	.7	.3	.9	1.0	1.6	.4	.7	.3			4.1	3.0	7.1

Rather it only means that a higher proportion are more mature and that the practised eye of the grazier-slaughterer can pick out these from the others. Moreover, as will be discussed later, farmers in the other areas, in particular in the east Highlands, are able to finish a large proportion of their more mature lambs on in-bye fields, and hence these do not enter the store markets. This is much less common in the west Highlands, however, because of the limited amount of in-bye feed available. All the Blackface lambs which are kept for feeding from Oban, Dalmally, Lanark, Stirling, Peebles and also a proportion of those from Perth are fattened on rented grass, foggage and rape in the Lanark area, i.e. Lanark, Peebles, West Lothian. The large majority of these lambs are put directly onto rape and are fattened in 8 weeks or less when stocked at about 20 lambs per acre. Lambs from the other markets are fattened on rented fields in Fife. A large proportion of these, too, are put directly onto rape for quick fattening. But some of them, in particular those bought from October to December at Inverness and Perth, go onto a stubbles and/or foggage - turnip sequence or are put directly onto turnips. These take somewhat longer to finish, 6 to 12 weeks at a stocking rate of 30 per acre being about the normal period required. These patterns of feeding, combining the rape of the central - west lowlands with foggage and turnips of the eastern arable areas (see Maps 32 and 36), together with access to markets for supplies, well illustrate the locational advantages of grazier-slaughterers such as the Jacksons who reside in South-West Scotland.

One further point to note concerning the Blackface lambs is the numbers and types bought each month. The Jacksons, and grazier-

slaughterers in general, try to distribute their purchases of stores evenly throughout the season although the total supplies available decline rapidly from August through to December (see pp. 242-244) and Table 53). The main reason for this is that grazier-slaughterers must fulfil orders and these are uniformly high from August to the end of January (p. 240). This reason is somewhat misleading, however, because grazier-slaughterers can, and do, determine to some extent the amounts to be supplied each month and the proportions of these which are stores. Thus, for example, the Jacksons could distribute their store purchases so as to coincide with total supplies if they so wished. But they prefer not to do so because during the peak supply period (August and September) competition from farmers drives store prices up. Conversely, as the season goes on, farmers' purchases decline and prices tend to drop. The reason why the Jacksons, and other grazier-slaughterers, are able to capitalize on this pattern of supplies, demands and price is that they are more flexible than farmers. Thus, whereas most farmers who buy stores lambs must make use of grass, foggage or stubbles which necessitates buying early in the season, grazier-slaughterers rent only the types of feed they require and hence can arrange for a more even distribution of purchases.

About one third of the Greyface lambs bought by the Jacksons between July and December were slaughtered immediately. The remainder were moved in a similar way from markets to the two main feeding areas. A large proportion of these were fattened on rape but a somewhat higher proportion than the Blackface lambs were put on a stubbles - turnip sequence and fattened later in the season than the rape-fed ones.



The Down-Crosses were treated in a similar way as regards proportions slaughtered immediately and types of feeding but almost all of the Half-Breds and Cheviots were fed on turnips.

Before beginning a discussion of the movement of stores bought by Scottish farmers, one further point should be noted here. Namely, although there are no grazier-slaughterers who reside in the East-Central Region and, with the exception of the Jacksons, none of them rent fields there, similar types of buyers do reside and feed a considerable number of store lambs in the area. These six buyers, three of whom have no farm(s) of their own, all rent grass, foggage, rape and turnips from farmers in Perth, Angus and Fife. They have been termed graziers and differ from grazier-slaughterers in that they are not in the wholesale meat trade. That is, they do not normally buy fat sheep nor do they slaughter their stores when fat and send them to regular customers as do grazier-slaughterers. Rather they sell them in the same way as farmers through fatstock auction markets or to public slaughterhouses. These graziers' purchases will be discussed along with farmers' purchases in the following section.

## 11. Distribution to Scottish Farmers

### Supplies

The estimated total supplies of lambs for feeding marketed from July to December 1966 and the number bought by Scottish farmers were as shown on page 254 (adapted from Table 53). It can be seen from the figures shown in (A) that Scottish farmers' purchases formed about the same proportion of total supplies from July to September and October to December for each breed. Thus, about three quarters of the lambs were marketed from July to September for

(A)

(Numbers in 000's)	Store Lambs for Feeding Marketed from July to December				Store Lambs for Feeding Bought by Scottish Farmers, July to December.			
	Total		% of Numbers		Total		% of Numbers	
	Numbers	%	Numbers	Total	Number	%	Numbers	%
Breed			July-Sept.	Total	Oct.-Dec.		July-Sept.	Total
								Oct.-Dec.
Blackface	378	100	275	72	103	28	173	84
Cheviot	195	100	155	80	40	20	115	81
Half-Bred	78	100	59	76	19	24	44	75
Greyface	293	100	217	74	76	26	186	78
Down-Cross	220	100	161	74	59	26	85	78
Total	1164	100	867	75	297	25	603	80
							153	20

(B)

(Numbers in 000's)	July to December				July to September				October to December			
	Total		Scottish Farmers		Total		Scottish Farmers		Total		Scottish Farmers	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Breed	Sold	Bought	Total	Sold	Sold	Bought	Total	Sold	Sold	Bought	Total	Sold
Blackface	378	206	55	275	173	63	103	33	32	26	66	74
Cheviot	195	141	73	155	115	44	19	15	55	24	41	32
Half-Bred	78	59	74	59	186	85	76	59	74	153	51	20
Greyface	293	241	82	217	161	85	53	70	297	153	51	20
Down-Cross	220	109	50	161	603	70	297	153	51	20	22	22
Total	1164	756	65	867	603	70	297	153	51	20	22	22

each breed and about three quarters of farmers purchases were also made during this period. This contrasts sharply with grazier-slaughterers supplies which were bought about equally during the two periods (see page 243 ). The reasons for this difference have been discussed previously so will only be summarized here as follows:-

(1) Unlike grazier-slaughterers, farmers can use only the feeds available on their own farms. It is in the early autumn months, particularly in August and September, that the most commonly used starting feeds such as grass, foggage and stubbles become available and hence it is then that the bulk of their purchases are made.

Of course, a large proportion of the lambs are later moved onto other feeds such as rape and turnips, but to make full use of all the feed available the lambs must be bought when the earliest types are ready for use (see also pp. 209-211).

(2) Largely because of the system of guaranteed prices, but also for other reasons such as the decline of turnip acreages and the use of more home grown feeds for dairy cattle, farmers try to fatten as many lambs as possible before the onset of winter. To do this they try to buy their supplies early and feed them quickly. Grazier-slaughterers, too, have a restricted peak period lasting till about the end of January. But they are, through greater experience, (i.e. - ability to pick out fat stores, estimating periods of time to finish different types of stores, greater knowledge of store and fat prices, more flexibility in feeding) and because of reduced transport charges owing to bulk shipment, better able to make a profit out of stores bought later in the season.

The figures shown in (B) illustrate several other important points. First, they show how competition amongst various types of

buyers differs for each breed. The low proportion (about half) of the Blackface lambs bought by Scottish farmers and its variation from two thirds during July to September to one third during October to December reflect the influence of grazier-slaughterers' purchases. On the other hand, the low proportion of Down-Cross lambs bought by Scottish farmers arises because of a large movement of these to England (Map 41, Table 53). Other important points are also shown but they are more appropriately considered later in the chapter.

#### Movement

##### General Aspects

It was possible to tabulate and map the distribution of lambs for feeding bought by Scottish farmers in a much more detailed manner than for grazier-slaughterers (pp.214-216) although it should be noted once again that the entire movement was not recorded. Nevertheless, 80 per cent of the 756,000 (estimated total) were traced to the farms where they were fed and, with the exception of certain parts of the South-West Region, almost all the movements for each breed were recorded (Table 33).

Before a detailed analysis by breed and region, it is useful to examine some of the more general aspects of the distribution. At the outset it is obvious from a comparison of the maps showing total distribution (compare Maps 42-44 and 47 with Map 10) that the lambs, regardless of origin or breed, are fed in the arable parts of the country. This does not mean that no lambs are fattened off the rough grazings of the Highlands and Southern Uplands; indeed, considerable numbers, particularly of the Blackface breed, are able

to be fattened off their mothers' milk on hill grazings. But the lambs that cannot be fattened in this way must be moved off the hills and these, together with supplies surplus to requirements for home-feeding from upland and lowland farms, are moved via the auction markets to farms in arable areas.

By reference to Maps 42-44 and 47, it can be seen that there are marked differences in the distributions for each breed within the arable areas. These distributions arise for several related reasons, the most important of which can be summarized as follows:-

(1) A proportion of the lambs, regardless of breed, can be fed on any of the commonly-used feedingstuffs and, to minimize transportation costs, farmers purchase them at local markets. Hence, there is a tendency for the distributions to reflect supplies locally available. For example, far more Down-Cross lambs would be fed than actually are fed in the central lowlands (Lanark - Stirling area) if more were available at local markets. Similarly, far more Blackface lambs would be fed in the North-East Region if more were sold in that area. In other words, the breeds fed in any area are to a certain extent determined by the distribution of breeding flocks and the patterns of marketing of the lambs produced by them.

(2) Although some lambs of every breed can be and are fed on the same types of crops, it is also true that particular feeds are often used for particular breeds or types of lambs. Moreover, there are considerable variations in the distributions and use of the most important crops for sheep feeding - grass and foggage (in particular, grass under 7 years), rape, corn stubbles (approximately the same distribution as tillage), sugar beet tops and turnips (Maps 32 to 36 and Tables 31 and 32). In other words, there tends to be areal



differences in the breeds and types of lambs fed arising from the suitability of these for particular feeds which are unevenly distributed throughout the arable area.

The main regional and seasonal variations in feeds used are shown in Table 31 and have been discussed on pages 209-213.

However, when one examines the suitability of the various breeds for these feeds, further information is required:

(1) Most of the store lambs fed by farmers are bought in August and September. These lambs usually take, at the least, about two months to mature, especially since a large proportion of the advanced stores are "skimmed" off, as it were, by grazier-slaughterers. Thus it is unlikely that the lambs will be fed on a single crop but rather they will probably be maintained on grass, foggage or corn stubbles and then moved onto other crops for final fattening.

(2) The earliest maturing breeds and types, that is, those which mature in two to three months, are most likely to be distributed to areas where the sequence of fattening is grass (or foggage), followed by rape. On the other hand, breeds requiring a longer period of time to mature, lasting until December or later, will be distributed to areas where grass, foggage or stubbles can be followed by turnips. These patterns reflect the fact that feeding on rape puts on weight rapidly but does not allow further development in size and maturity whereas turnips along with grass do allow development of these features but a longer period is required to bring the lambs to the fat stage. These considerations, taken together with the fact that rape is available early in the autumn but turnips are not ready until the late autumn and New Year, have

led to the situation whereby the faster maturing breeds are distributed to the rape-finishing areas whilst the slower maturing breeds are distributed to the turnip-finishing areas, although both types are usually maintained for a part or whole of the period on grass or other supplementary crops.

When the distribution by breed of lambs for feeding is considered it is very difficult to assess the relative importance of these factors, particularly the relative importance of supplies locally available from the tendency for certain breeds to be fed on particular crops. The difficulty arises because in most cases the supplies locally available are, in fact, of the breed and type most suitable for the feed available. For example, the bulk of the Blackface lambs sold in Scotland are marketed in the south-west Highlands, the South-West and East-Central Regions and are fed in the lowland areas of the latter two regions (Maps 37 and 42). Undoubtedly the concentration of fattening in these areas is largely due to the suitability of Blackface lambs for rapid fattening on rape (Map 36) but it is also due in part to the fact that supplies are locally available. Similarly, the concentration of the feeding of Cheviot stores in the east is due largely to their slow rate of maturity (Table 32), which means that most of them are fattened ultimately off turnips (Maps 35 and 43). But the fact that the bulk of the Cheviots are marketed in the east (Map 38) is also a factor leading to their distribution to farms there. An even better example is that of the Half-Bred lambs. As shown in Table 32, about half those sold as stores are fattened by the end of November. If these were produced on the uplands of, say, Ayrshire and Lanarkshire, it is quite likely that a considerable number of these earlier maturing Half-Breds would be fed

off grass and rape on local lowland farms. However, since they are, in fact, produced and marketed in the east, they are fed in that area off grass, stubbles and to some extent off grass and turnips. In other words, the earlier maturing types of Half-Breds could be fed on almost any of the crops available but they tend to be fed on arable crops in the east because that is where they are produced and marketed. The influence of supplies and types and qualities of feed on the overall distribution of breeds is also well illustrated by a comparison of the Down-Cross and Greyface breeds. As a comparison of Maps 39, 41 44, 45, 47 and 48 shows, both Greyface and Down-Cross lambs are marketed and fed in large numbers in the area from Aberdeen to Fife and to a certain extent they are fed on the same types of feed, that is, up to a point they are more or less interchangeable and, since both are available locally, the patterns of distribution tend to be similar. Yet, at the same time, the Down-Cross lambs tend to be confined more to the east where the land and feed are of somewhat better quality. This is a reflection of the fact that a higher proportion of the Down-Cross lambs, in particular those out of Half-Bred ewes, require somewhat more and better feed than the Greyface lambs.

In summary, the following points can be made regarding the distributions of lambs for feeding.

(1) Blackface lambs are produced on the wetter hills of the central Highlands and western Southern Uplands. After being collected at various markets fringing these hills they are distributed to upland and lowland farms for fattening. Although distributed over an extensive area, the bulk of the lambs are fed on nearby farms in the

South-West and western parts of the South-East and East-Central Regions. ) This pattern reflects (a) the influence of local supplies on demand, (b) the importance of rape in these wetter dairying and stock rearing areas (Maps 4 and 36), rape being an ideal crop for fattening the fast maturing Blackface lambs.

(2) Cheviot lambs are produced on the drier and/or grassier hills of the north Highlands and eastern Southern Uplands. There is an initial eastwards movement to markets after which the lambs are distributed to eastern arable farms. The pattern of feeding is due in part to the eastward bias of production and marketing, but is primarily due to the fact that almost all the Cheviot stores must be fed off turnips, a crop associated with the drier and more intensive arable farms of the eastern lowlands.

(3) Half-Bred lambs are produced, marketed and fed in the eastern areas, i.e., the pattern resembles that for the Cheviot breed. But since a large proportion of the Half-Breds are finished before the turnip feeding season, it would appear that location of production and markets is a more important determinant than for the Cheviots.

(4) Down-Cross lambs are produced on farms in the best lowland areas and, because they require high quality and large amounts of feed, they are fed in these same areas.

(5) The distribution pattern of Greyface lambs bridges the gap, as it were, between the wetter "green" feeding areas (p.213) for Blackface lambs of the central - south west lowlands and the drier grass, stubble and root-feeding areas for Cheviots, Half-Breds and Down-Crosses of the eastern lowlands. This reflects the intermediate location of the production of Greyface lambs and the adaptability of the breed

for various types of feeding.

#### Movement by Breed

This discussion is useful as a guide to the distribution patterns, but there are other important features which require explanation when the movement is looked at in more detail. Each breed will be considered separately beginning with the Blackface.

#### Blackface Lambs

The number of Blackface lambs contributed by each region to the total fed by Scottish farmers, the percentage these form of the total, and the distribution in numbers and percentage to each region are shown in Tables 33, 53 and 54. These outputs and distributions have been examined in previous sections and hence require little further comment. The main points which do require examination are:

- (1) Why are 23,000 lambs exported from the South-West Region to the East-Central and South-East Regions whilst 12,000 are imported from the Highland and South-East Regions (Table 54)?
- (2) Why do farmers in Fife buy only 500 lambs from local markets in the East-Central Region while buying 6,000 from more distant markets (Stirling, Lanark, Oban and Dalmally) in the South-West and Highland Regions (Tables 34 and Maps 37 and 42).

The answer to question (1) is quite straightforward when the distribution from individual markets is considered. As shown in Table 34, the lambs moved to the East-Central and South-Eastern Regions from the South-West Region go there from Lanark and Stirling markets; those imported from the Highlands come from Fort William, Oban and Dalmally and go to Lanark, Stirling, Ayr, Renfrew and



Dumbarton and those from the South-East move from Peebles market to Lanark and from Hawick and Newcastleton to Dumfries. These movements simply reflect the normal distribution hinterlands of the various markets and the fact that they cross inter-regional boundaries is, as it were, incidental. For example, Stirling and Lanark markets are, in fact, local markets for farmers in the East-Central and South-East Regions whilst Oban and Dalmally are local markets for farmers in the western parts of the South-West Region.

Question (2) is more difficult to answer, especially in view of the fact that supplies are available in large numbers at markets within the East-Central Region and they are in fact, bought by farmers in the other counties of the region (Table 34). The explanation of this pattern involves several related factors. First, the auctioneers (Speedie Brothers) who operate the Cupar market in Fife also operate Dalmally market and have close links with Oban and Fort William markets through the association of all of these with Live Stock Marts in Stirling. In other words all the markets from which Fife farmers buy Blackface lambs outwith the East-Central Region are linked in one way or another with Speedie Brothers in Cupar. Second, more so than in other parts of the East-Central Region, Fife farmers want the smaller types of Blackface lambs which can be bought in August and September and finished quickly off grass, foggage, rape and sugar beet tops. This reflects (a) the greater importance of dairying in Fife which, as discussed on page 211, gives rise to attempts to finish lambs before the onset of winter, (b) the greater importance of green crop feeds in Fife, in particular rape and sugar beet tops, (a large acreage of the turnips which might be

available are rented by the Jacksons - see p. 251). It should be noted, however, that this preference for smaller, earlier-marketed Blackface lambs is not confined in the East-Central Region to Fife alone. But it is most important there and is significant because the locally marketed "Perth" Blackfaces are not only larger and slower to mature than the types sold elsewhere but are also marketed later in the season (Table 55) because many of the glen farmers keep a proportion of their hill-bred lambs on in-bye fields before selling them as stores. On the other hand, the lambs sold at Stirling, Oban, Dalmally and Fort William are of the smaller, faster-maturing types and are marketed earlier in the season.

Over the years these factors have worked together to give rise to the present-day patterns of movement. And, realising the preference of Fife farmers for the smaller, earlier-marketed Blackfaces, Speedie Brothers in Cupar have encouraged them to go to Stirling and the west Highland markets. Of course, Fife farmers would undoubtedly have bought part of their supplies at these or other markets in that area in any case. But it is also a recognized fact amongst rival auctioneers that the volume of purchases and the particular markets at which they are made are partly due to the "goodwill" (i.e., credit, personal relationships between auctioneers and farmers, etc.) and enterprise of Speedie Brothers in Cupar.

The tendency for Blackface lambs in the East-Central Region to mature later and at heavier weights and to be marketed later is also an important factor in the buying patterns in other feeding areas of the region. As shown in Table 31, grass alone or grass and rape are the most important methods of fattening in the East-Central Region

from August through November. As a general rule, lambs are put on rape only for final fattening, that is, they do not go from rape onto turnips. Consequently only the faster maturing types of Blackface, in particular those bought during August and September and which fatten in the following two months, will be put on the grass-rape sequence. On the other hand, the larger and later maturing types, even if bought early, often require feeding on a grass (foggage) - stubbles - turnips sequence, on which they become fat from December onwards. A proportion of the "Perth" type Blackfaces are fattened off grass and rape by November, but many are not ready by that time and therefore must be fattened later on turnips. Hence, the situation has arisen whereby farmers in the East-Central Region tend to feed the earlier maturing Blackfaces bought from markets in the South-West and west Highlands off grass and rape and feed the locally bred ones later off turnips. Furthermore, it is this factor which has led many glen farmers in the East-Central Region to hold back some of their lambs and market them later when supplies from elsewhere are already fattened and the demand for locally bred ones for feeding off turnips takes over. The only difference between Fife and the other feeding areas is that, for one reason or another, turnip feeding of Blackface lambs by farmers in Fife is not as common as elsewhere in the region and hence fewer of the locally-bred lambs go there. One reason for this is that the Jacksons rent a large acreage of turnips in Fife (p.251). Another possible reason is that a greater proportion of the turnips in Fife is devoted to the feeding of other late maturing breeds (e.g. Down-Cross and Greyface lambs).

Another feature of the East-Central Region is the category of

buyer classified as grazier (p. 253). As shown in Table 34, graziers fed 8,000 Blackface lambs during 1966, about half of which were bought in the west Highlands and half locally. This pattern reflects the buying pattern of farmers in the region (excepting for Fife), the west Highland lambs being fattened early off grass and rape and the local ones being fattened later off turnips. It is difficult to explain why graziers are common only to this region but not, for example, to the South-East, South-West or North-East. Of course, in the case of the two former regions, grazer-slaughterers fulfil the same function as graziers in that they rent feed from other farmers, but this is not common in the North-East.

One final feature to note about the distribution of Blackface lambs concerns the Highland Region. The north Highland markets receive supplies from the surrounding hills and from the west coast including Skye and North Uist and the west Highland markets from nearby mainland farms and from the islands as far north as North Uist (pp. 223-224). And, as is shown in Table 34, the north Highland markets distributed to the eastern coastal area from Inverness to Aberdeen whilst the west and south Highland markets distributed to the east central lowlands from Renfrew through to Fife. This pattern is noteworthy in that it shows how the initial pattern of collection determines, to some extent at least, the eventual destination of the lambs.

#### Cheviot Lambs

In view of the marketing patterns and slow maturity rates for Cheviot lambs it is not surprising that they are sent to eastern Scotland for feeding. (Table 35 and maps 38 and 43). However,

as with the Blackface breed, some of the patterns and lines of movement are more difficult to explain on a more detailed scale. For example, why are considerable numbers of Cheviot lambs sent to England from south Scotland whilst, at the same time these farmers in the south receive supplies from north Scotland (Maps 38 and 43 and Tables 51, 53 and 54)? Or, why is it that most of the northern lambs moved to south Scotland are transferred from Caithness markets rather than from less remote markets such as Inverness, Lairg or Dingwall? It is these and other questions not answered in the previous discussion (pp. 256-262) that will be examined here.

The movement to England of an estimated total of 28,000 lambs or about one third of total supplies marketed in south Scotland (South-West and South-East Regions) and the import of about 17,000 or one quarter of farmers' supplies there from north Scotland does indeed appear strange at first sight. The movement to England from south Scotland is made more understandable, however, by an examination of individual markets and the areas in England to which the lambs go. As shown in Tables 35 and 51, this movement involves a transfer from the Border markets of Hawick, St. Boswells, Reston, Newcastleton, Lockerbie and also Annan and Thornhill (unrecorded) to the nearby English counties of Cumberland and Northumberland. In other words, the lambs sent south of the Border are within the normal distribution hinterlands of the markets involved. And, since this leaves some unsatisfied demand for Cheviot lambs to feed in south Scotland, some lambs have to be imported from alternative sources, that is, from the surplus area of north Scotland. The fact that about two thirds of the north - south transfer is effected by dealers makes the movement



even more comprehensible. Thus, only a few farmers from south Scotland actually go north to buy for themselves, the vast majority receiving their northern lambs from dealers directly or at southern markets, in particular at the Edinburgh markets and also at Annan (Tables 35 and 54, see also p. 228). There are several other factors involved in these movements, chief of which are (a) prices, (b) types of lambs. Interviews with those persons intimately concerned with the Cheviot lamb trade suggest that the following situation is the normal one as regards prices, although it is not capable of quantitative proof. For lambs of the same general type, prices are normally lower at north than at south Scotland markets. In particular, they are lower by an amount sufficient to allow buyers who can fill waggons (i.e. dealers and farmers who buy in large numbers) to cover the transport and other costs necessary to transfer them to south Scotland. The reasons for this price difference are many and include:

- (1) as a general rule farmers in the north must sell their lambs early in the autumn because grazings deteriorate whereas farmers in the south can, if prices are too low, keep them on for a longer time;
- (2) as indicated by the importance of dealers, supplies in the north are much greater than are needed by local farmers and hence sellers must often be satisfied with a price low enough to cover the dealers and non-local farmers' overheads.

A second important factor, and one which makes price comparison difficult, is that the lambs in the north and south tend to be of different types (pp. 226-227). Considered on the broad scale, it can be said that the northern Cheviots, both South or North Country, tend to be smaller and

somewhat more hardy than their counterparts in the south owing to differences in environment and management. Moreover, some farmers in the south have found that these northern lambs "thrive" or "shift" better and are more profitable "at the end of the day" than those bred in the south. The relative advantage of northern bred lambs as regards "thriveability" is difficult to measure, but is commonly recognised by farmers and probably arises because the transfer to feeding farms in the south involves a greater contrast with their original environment. This is not meant to imply that all northern lambs shift better than southern-bred ones. Nor does it mean that all farmers in the south would find them more profitable even if they did shift better, because there are many other factors to consider. However, it does mean that on particular farms the northern-bred lambs have been found to be as suitable, or more suitable, than those locally bred and this contributes to the north - south movement.

As Maps 35 and 43 show, almost all the Cheviot lambs bred in north Scotland are moved out of the producing areas to turnip-feeding areas along the east coast from Easter Ross south to Berwick and also to Dumfries. The reasons for this pattern have been examined above but within it there are particular lines of movement requiring further investigation. These lines of movement and the types of Cheviots involved can be summarized as shown on page 270 (see also pp. 226-227).

Movement to the South-East Region will be considered first. It can be seen that the park-type North Country Cheviot from Caithness is by far the most important and that dealers account for about

Markets	Predominant type(s) of Cheviot	Total Sold to Scots Farmers	Distributed from Markets to:									
			Farmers Directly					Dealers, then to Farmers				
			Hd	NE	EC	SE	SW	Hd	NE	EC	SE	SW
A. Thurso, Wick Latheronwheel, Lybster.	Park-type North Country	19542	838	7072	1163	3103	149			200	6067	950
B. Lairg and Dingwall.	Sutherland-type North Country; Croft and South Country N.B. minority at Dingwall	38717	12487	12504	8046	1375	451	191			1825	1838
C. Forsinard, Helmsdale, Rogart, Brora, Rhiconich, Kinbrace	Croft-type North Country.	7431	2730	3900	638	63						100
D. Inverness	South Country	9767	2690	4246	952	144					1424	311
TOTAL	All Types	75457	18745	27722	10799	4622	663	191	200		9316	3199

two thirds of the total moved. To understand these features, the origin of the connections between north Scotland and the South-East must be taken into account. It was to Caithness that many flock-masters from the South-East moved with their Cheviot flocks at the end of the 18th and beginning of the 19th centuries (Chapter I). This established a link between the two areas which was strengthened by steamboat services from Wick and Thurso to Leith (1833). Arising from this connection, first Cheviot lambs for feeding,<sup>18</sup> then Cheviots for breeding (pp. 153-154), began to be shipped regularly to south Scotland by dealers and sold at the three Edinburgh markets for further distribution. This pattern has continued although in recent years there has been a growing number of farmers who go to Caithness themselves, and most of the sheep are now moved south by road.

The South-West Region, in particular Dumfries and Kirkcudbright, has also had connections with north Scotland for many years, but its supplies of both breeding and feeding Cheviot sheep have tended to come from Lairg and Dingwall as well as from Caithness. As will be discussed more fully below, this difference is partly due to the different types of Cheviots required. But it is also partly explained by the fact that a considerable proportion of the lambs moved to the South-East have always gone by sea whilst those to the South-West have gone by land. Thus, dealers buying for farmers in the South-East have tended to purchase most of their supplies at Caithness markets and dealers buying for farmers in the South-West also buy at Lairg and Dingwall on their way south from Caithness. It should be noted here that the dealers who do buy for the South-West Region sell

most of their lambs at Annan and hence the distribution of these is not shown on Map 43.

These factors explain the positive but not the negative side of the north - south movement, that is, they explain the development of connections between Dingwall, Lairg and the Caithness markets with south Scotland but they do not explain why so few supplies are drawn from the other markets. The main reason for this pattern is the preference of the southern buyers for the larger types of northern Cheviots. This does not mean that southern farmers do not fatten the smaller types. Indeed, a considerable proportion of the Cheviots bred and moved to farms within the south itself is of the smaller South Country variety. However, the larger North Country types are also bred there and a proportion of both types are sent from south Scotland to England. Hence, it is rather difficult to explain the preference for the larger northern types. The fact that it does exist, however, indicates that the movement to England of the smaller types represents a surplus of that type whereas the movement of the larger ones represents a loss which requires replacement from elsewhere. Alternative supplies in the form of the Sutherland and park-type North Country Cheviots are, therefore, brought down from the north to satisfy this demand.

Movement of Cheviot lambs to farmers in the East-Central Region from elsewhere is to be expected in view of the paucity of locally-bred Cheviots and the existence of a considerable demand for sheep to feed off turnips. The fact that it is to north Scotland that farmers in the region look for their supplies is understandable, too, because excess lambs in the south find their natural outlet further south in England. There are, however, several other



features which are not so easily understood, such as the lack of the importance of dealers and the concentration of purchases at Lairg (Table 35 and p. 270 ). A partial explanation of this pattern is that farmers in the East-Central Region prefer the larger types of North Country Cheviots. This arises largely because the farmers there who do feed Cheviots are on good arable land and have sufficient feeds of the right types to fatten the larger lambs. Hence, to begin with, it would be expected that the Caithness markets or Lairg or Dingwall could be the source of supplies. The fact that Lairg supplies almost all of these is, however, more difficult to understand. There are two main reasons for the concentration of purchases there:

(1) M'Donald-Fraser's, the most important auction company in the East-Central Region, also operate the Lairg market (Map 12). This connection influences the buying pattern of Cheviots in a similar manner as the connection between Speedie Brothers in Cupar with other markets influences the pattern of movement of Blackface lambs (pp. 263-265). Moreover, the auctioneers from M'Donald-Fraser's at Perth go north themselves to conduct the Lairg sale and this reinforces the special relationship,

(2) Farmers in the East-Central Region who feed Cheviots are primarily interested in cropping and keep Cheviots only as a sideline to consume arable by-products such as grass, foggage, stubbles and turnips. Arising from this, they prefer to buy all their supplies at one time in large uniform lots, this being a reflection of their need to minimize the loss of time away from the demands of autumn cropping chores. Lairg is a suitable centre in this regard because 30,000 Cheviot lambs for feeding grouped in uniform lots of 100 to 200, are

sold there in two days during the third week of August. Moreover, no other market in north Scotland, nor indeed anywhere in Scotland, rivals Lairg as regards uniformity of supplies and size of individual sales. For these reasons then, farmers in the East-Central Region prefer to receive supplies of Cheviot from Lairg. The short distance to Lairg allows them to purchase their own supplies and consequently dealers are unimportant.

The patterns of buying and movement within north Scotland itself resembles that of south Scotland in several respects. Thus, a proportion of the lambs are bought by local farmers without the intermediary activities of dealers and a proportion are sent further south in both cases. Also, in both areas, local farmers purchase at all the markets and hence the full range of types is involved. This latter aspect, the distribution of different types, could not be adequately analysed in the south because of the omission of two important markets (Annan and Thornhill) and the fact that the various types were sold at the same market centres (p. 229). However, as shown on page 270, the main types in the north were sold at different centres and since all of these were recorded the distribution by type can be examined there.

At the outset it can be said that there are no noticeable areal difference in the distribution of the four types within the north. Each type was separately plotted by grid square but since the patterns were similar they have not been shown separately on Map 43. However, it is known that within the main receiving area (i.e., from Easter Ross along the Moray Firth to Aberdeen and Kincardine) different types of farms tend to take different types of Cheviots. In

particular, the smaller, slower maturing croft-type North Country and South Country varieties tend to be bought by farmers on second quality arable or semi-arable land whilst the larger types tend to be bought by farmers on high quality arable land. In addition, the former types of farms tend to be smaller than the latter. In other words, the larger, better arable farms tend to receive the larger varieties of Cheviot and the smaller, second quality arable and semi-arable farms tend to take the smaller types of Cheviots. However, these types of farms are intermixed within the feeding areas, hence no noticeable areal differentiation occurred on the scale at which the distributions were mapped. This contrasts with the East-Central Region where almost all the farmers who feed Cheviots have large, high quality arable farms.

The preference of farmers with small second quality arable farms for the smaller types of Cheviots arises for several inter-related reasons. First, they do not have enough feed or feed of high enough quality to fatten the larger types profitably. Second, they often lack the capital to purchase the larger types, these being on average about ten to fifteen shillings per head more expensive than the smaller varieties (Table 29). Third, owing to the small size of their farms, only a small number of lambs can be fed. Hence, it is more suitable for them to purchase the smaller types which are sold in small lots because they come from small farms and crofts. This contrasts, of course, with the large, uniform lots sold off the large farms and estates at Lairg and the Caithness markets. Fourth, there is a wide range of land types on these semi-arable farms and this makes the variagated lots of the crofters and small farmers an

asset. Moreover, as will be more fully discussed in a later section, many of these farmers have found it more convenient and profitable to buy their Cheviot supplies quite late in the season (September, October, early November) and sell them later as store hogs. Here again, the smaller lambs are preferred because they are suitable for keeping on a "store" diet and they are marketed throughout the autumn months. In contrast, the bulk of the larger lambs are sold during August and would "go back", i.e., lose weight and condition, if they were put on the same plane of nutrition as the smaller lambs. These factors, when viewed from another aspect, can be thought of as making a virtue out of necessity. In any case, the fact remains that a system has been evolved whereby it is profitable for the smaller farmers on poorer land to purchase the smaller, more varied types of Cheviots. Similarly, for reasons already examined in connection with the East-Central Region (pp.272-274), the system of selling the larger Cheviots early in large, uniform lots, has been evolved as being mutually beneficial to both sellers and buyers.

#### Half-Bred Lambs

The patterns or lines of movement for Half-Bred lambs are generally the same as those for Cheviot lambs. Thus, supplies from the north of Scotland are distributed locally and to the East-Central and southern regions and supplies from south Scotland are distributed locally and to England (Table 37 and Maps 40 and 46). Furthermore, the patterns arise for the same basic reasons which can be summarised as follows:

- (1) Purchases at the Border markets by north England buyers give rise to an excess of demand over supply in the southern regions of Scotland.
- (2) Demand is greater than supply in the East-Central Region, too, but arises because few Half-Bred lambs are bred there.
- (3) Demands in excess of local supplies in these regions are met by the transfer south of lambs surplus to the requirements of northern feeders.

For Cheviot lambs, the above basic movements are complicated by a variety of types and marketing patterns. However, as will be discussed below, the situation is much more straightforward for Half-Bred lambs.

Movement from the far north to the south of Scotland resembles that of Cheviot lambs in that the majority of the Half-Breds, too, are moved south by dealers. There are several important differences, however. First, the Half-Bred lambs moved down from the north are very similar to those produced in the south itself because in both areas they are produced from the larger types of North Country Cheviot ewes under similar upland conditions. Second, although some Half-Bred lambs from the north do tend to thrive better when moved south to particular farms, this is much less important than it was for Cheviot lambs. In other words, the movement is much more one of straightforward supply and demand for the same or a very similar product. The excess demand in south Scotland arises, of course, because north England, in particular Cumberland and Northumberland, is within the natural distribution hinterland of the Border markets (Tables 37 and 51). Moreover, as it is the eastern Border markets which supply most of this English trade, it



is in the South-East Region that most of the northern Half-Breds are required.

Most of the Half-Bred lambs moved from the far north to the South-East were transferred by dealers (Table 37). Indeed, dealers accounted for about three quarters, or 7,300, of the total lambs moved. Some 5,500 of these were carried south by individual dealers and sold at the three Edinburgh markets, but the other 1,800 were purchased by the Caithness Livestock Breeders Association and sent directly to farms in Berwick and Roxburgh (Table 37). The C.L.B. are not, strictly speaking, dealers in the conventional sense but it was convenient to include them in this category (pp. 180-181).

The movement from the Caithness to the South-East "leap frogs" the Aberdeen-Moray producing areas. This arises because most of the lambs in this area are required by local feeders, including those in the East-Central Region (Table 37).

#### Greyface Lambs

With the exception of the Highland Region, the vast majority of Greyface lambs sold to Scottish farmers were distributed to farms within the region where they were produced. This is primarily due to the distribution of Greyface lamb production in relation to the distribution of areas where they are fed. The distribution of Greyface lamb production is such that there are feeding areas adjacent to each major producing area (Maps 7 and 44). This tends to reduce long distance inter-regional movements such as arise when producing and feeding areas are separated, e.g. Half-Bred lambs produced in Caithness must be moved south. Then, too, Greyface

lambs in each area tend to be of the type suitable for the feeds locally available. Thus, the heavier Greyfaces produced along the eastern Grampians are suitable for fattening late off turnips on adjacent lowland farms whilst the lighter types of the South-West, in particular those produced from Newton Stewart Blackfaces, are suitable for rapid fattening off rape in that region.

The inter-regional movements which do occur are often more apparent than real, in the sense the lambs are distributed within the hinterland of a market which lies close to regional boundaries. Examples of this are quite common and include such movements as those from Kittybrewster and Stirling markets to the East-Central Region, from Lanark to Peebles and the Lothians and from Newcastleton to Dumfries (Table 36). There are, however, other inter-regional movements involving longer distances which require a more detailed analysis. There are, of course, long-distance transfers arising purely from differences between local supply and demand. For example, in the East-Central Region demand exceeds local supply, i.e. supplies available at markets in the East-Central Region and nearby markets and in Stirling and Kittybrewster in adjacent regions, and hence lambs are brought in from distant markets such as Huntly, Inverness, Oban and Tiree (Table 36). Other long distance movements arise because, although in numerical terms enough lambs are available, the local lambs are not of the particular type desired. This explains the movement from Aberdeen markets to the South-East Region, where some farmers feel that the Aberdeen-bred Greyfaces are better than those locally available.

A final feature to note concerning the movement of Greyface lambs is that considerable numbers are fed by graziers in the East-

Central Region (Table 36, see also pp. 265-266).

#### Down-Cross Lambs

As is shown in Tables 38 and 54 and on Maps 6, 8, 41 and 48, most of the Down-Cross store lambs sold to Scottish farmers are fed in same general areas where they are bred. This is to be expected because they are produced on lowland farms within the main feeding areas. An exception to this is the Highland Region where the lambs, at least those sold as stores, must be moved to feeding areas further east. There are other inter-regional movements but, as with the Greyface lambs, these are simply explained by the proximity of markets to regional boundaries or by fewer lambs being available than are required (Table 38). The only important movement falling outwith these explanations is that from the Border markets of St. Boswells and Hawick to the East-Central Region. This movement takes place mainly during July at which time there is a demand by arable farmers in the East-Central Region for store lambs but none are available locally. However, Down-Cross lambs are sold at the Border markets during July and hence that is where purchases are made (Table 55).

### III. Distribution to England

#### Supply and Markets

The estimated numbers of feeding lambs bought by English dealers and farmers during 1966 are given in Table 53 and their percentage of total market throughputs are shown on Maps 42 to 48. In addition, the numbers bought at each recorded market are shown in Tables 34 to 38 and on Maps 37 to 41 and the distribution of these within England

is given in Table 51.

These tables and maps show that all regions excepting the East-Central Region contribute a considerable number of lambs to the movement south of the Border. Movement from the two south of Scotland regions takes the form of distribution to north England, in particular to Northumberland and Cumberland, from the Border markets of Reston, St. Boswells, Hawick, Newcastleton, Lockerbie and presumably Annan and Thornhill. This pattern is to be expected because the north of England falls within the natural supply area of these southern markets. In other words, these patterns are simply southward extensions of those obtaining in adjacent areas of Scotland. The fact that some of the lambs do find this natural outlet in England has important implications for Scottish farmers. Indeed, as has been described in the preceeding section, it often necessitates the importation of lambs from other Scottish regions to satisfy demands in excess of local supplies. For example, the movement to the two southern regions of Cheviot and Half-Bred lambs from the far north is due in large part to the fact that a considerable number of the locally bred ones are taken south to England.

Movement to England from the Highlands and Caithness (i.e., the only part of the North-East Region from which a significant number go to England) arises for somewhat different reasons than movement from the southern regions. Thus, whereas the latter involves the concept of normal supply hinterlands, the former involves the idea of total supply and demand. That is, the movement to England from the Highlands and Caithness can be thought of as representing the surplus above requirements of Scottish feeders, be they farmers or grazier-slaughterers.

The lack of any movement to England from the East-Central Region is understandable in terms of the absence of either of these factors. It is too far from the Border for England to be within the natural supply area of its markets and supplies are not in excess of local demand. Indeed, demand in the East-Central Region is in excess of local supply and hence lambs of all breeds are moved into the area and virtually none is moved out even to other Scottish regions.

#### Distribution

Time did not permit a detailed investigation of the distribution of Scottish lambs within England. However, information gained from various sources, including agricultural advisers, farmers and dealers in the main English receiving areas, did provide enough information for the following general discussion.

In broad terms, Scottish lambs moved to England are fed on similar crops to those used in Scotland. Moreover, as in Scotland, there is a tendency for "green" crops to be more important in the wetter western districts and stubbles and root crops to be more important in the drier eastern arable areas. There is, however, one main exception to this pattern, namely that the main root feeding crop, turnips, is important in the Eden Valley of Cumberland. This is a reflection of the drier climate of the district arising from its location in the rain shadow of the Cumberland fells. There is, however, an additional factor to take into account, at least in north England to which the majority of the lambs go. This factor is that the main consuming population (the Liverpool-Manchester conurbation (about 6 million population) on the west of the Pennines, and Leeds -



Bradford, Huddersfield, Wakefield and Tyneside conurbation (total about 5 million population) on the east of the Pennines) tend to prefer different weights of lambs. The preference of consumers in the Liverpool - Manchester area for light, lean and small lambs has already been mentioned in connection with Scottish grazier-slaughterers (pp.239-241) and this contrasts with a preference for heavier, larger lambs in the eastern areas. Time did not permit the origin of this difference to be traced but it known to have existed for many years and is common knowledge to wholesale butchers who supply either or both markets.

Before examining how these factors influence the movement from Scotland it is useful to show the distributions which arise from them. During 1966, the number and percent by breed moved to each of the two north of England regions (from recorded markets only) were as follows (from Table 51):

Breed	North England		North-West		North-East	
	Number	%	Number	%	Number	%
Blackface	34,454	20	21,799	32	12,655	12
Cheviot	38,066	22	29,505	44	8,561	8
Greyface	8,989	5	3,038	4	5,951	6
Half-Bred	12,812	8	4,341	6	8,471	8
Down-Cross	75,827	45	9,064	12	66,763	66
Total	170,148	100	67,747	100	102,401	100

These figures show that the smaller Scottish Breeds, the Blackface and Cheviots, form the bulk of the movement to the North-West Region

of England because of the demand for lighter lambs there and because suitable feeds for both types are available. Approximately one third of the Blackface, including almost all of the 4,500 sent to Lancashire, were bought by grazier-slaughterers (included under dealers - see pp. 213-214) for immediate slaughter or short keep on rented fields, the others being fed on grass, foggage and rape chiefly in the wetter lowland parts of Cumberland, with the Seascale district being the most important single area. Whether fed or slaughtered immediately, most of these lambs were consumed in the Manchester - Liverpool area before December. Almost all of the Cheviots were bought and fed off turnips by farmers in the Eden Valley district of Cumberland. The slow maturing rates of the Cheviots is an asset because when sold fat from March onwards, they fetch high prices in the Manchester - Liverpool area. Indeed, the fattening of Cheviots during this period is recognized as being one of the most profitable sheep feeding enterprises in north England and arises because other breeds are either fattened by this time or are too heavy for the Manchester - Liverpool consumers. The other Scottish breeds are less suitable for the feed and markets in the North-West Region but some are fed, in particular the lighter types such as Suffolk crosses out of Greyface and Cheviot ewes.

In contrast, the heavier breeds and types of Scottish store lambs form the bulk of the movement to the North-Eastern Region. This is due in part to the suitability of arable feeds for the heavier types of lambs and also due to the ready market for these lambs when fat. Hence, it is not surprising that the heaviest Scottish lambs, in particular Down-Crosses out of Half-Bred ewes,

are the predominant type moved to the North-East. An interesting feature of this movement is that about 30,000 of the 66,000 Down-Cross lambs were slaughtered immediately by Yorkshire grazier-slaughterers-cum dealers. Another important point to note is that almost all of the Blackface lambs (8,000) moved to Yorkshire were fed on grass and rape by a grazier-slaughterer who owns and rents land in the West Riding near the Lancashire-Yorkshire border. Hence this can be thought of as more properly belonging to the North-West Region, particularly in view of the fact that the lambs were sent to the Manchester-Liverpool area when fat.

This discussion completes the analysis of store lamb movements which took place between July and December, 1966. In the following section the movements of hogs and spring lambs will be examined, thereby extending the analysis to cover one full year.

#### B. January to June

##### I. Hogs

It was not because of the change of nomenclature from lambs to hogs at the end of December that the movement of each is considered separately in this study, but because there are important differences in the supply, demand, feeding and movement of each type. The most important of these are as follows:

- (1) A considerable proportion of the store hogs are sold by farmers who bought them previously as lambs. Thus, the supply areas for hogs tend to be different from those for store lambs because almost all the lambs are sold by the farmers who bred them.

- (2) Until December, there are considerable regional differences in the way in which lambs are fed and, because of differences in the suitability of each breed for particular feeds, this is an important factor determining the patterns of movement. However, after December almost all the remaining hogs, including those bought as stores, are fed on grass and turnips or turnips alone. Hence, the movement of hogs is influenced by the amount rather than the type of feed available in each area.

#### Supply and Movement to Markets

About 9 per cent or 128,000 of the 1.32 million store lambs and hogs marketed during 1966 were sold as store hogs between January and June. And, as is shown in Table 55, most of these were sold during the period January to April. Some hogs were sold at 28 of the 90 store sheep markets but in many cases the throughputs were very small. Thus, although only 17 markets were recorded, these accounted for 91 per cent of the estimated total throughput (Table 33).

The recorded and unrecorded markets selling some store hogs in each region were as follows:

Region	Number of Markets Selling Store:		Markets selling Store Hoggs	
	Lambs	Hoggs	Recorded	Not Recorded
Highlands	26	1	Inverness M'Donald-Fraser	-
North-East	22	4	Thurso (Hamilton's) Kittybrewster, Aboyne	Turriff
East- Central	10	6	Kirriemuir, Forfar, Aberfeldy, Perth (2), Cupar	-
South- East	9	6	Edinburgh (Bosomworth) Hawick St. Boswells	Bathgate, Edinburgh (Oliver) Peebles
South- West	23*	11	Stirling (Live Stock Marts) Ayr, Castle Douglas, Lockerbie	Stirling (Caledonian), Lanark, Biggar, Glasgow (2), Brodick, Annan.
Total	90*	28	17	11

\*includes two markets in Dumfries (Tables 20 and 21, Map 12) selling store lambs only during the spring.

The reduction from 88 markets selling store lambs during the autumn to only 28 selling store hoggs arises for two related reasons. First, it reflects the fact that almost all the surplus stores from hill farms are sold as lambs. Thus, there are almost no supplies available in the hill areas proper, this being best illustrated by the reduction in the number of markets in the Highland Region. Second, although some farmers in the upland and lowland areas keep lambs (either home-bred or bought as stores) to sell as hoggs,



supplies of these are limited and hence only a few of the larger centres find it profitable to hold sales.

An interesting feature of the store hogg trade is the importance of Inverness. During 1966, this one market alone handled 40,000 store hogs or about one third of the total Scottish throughput. This contrasts sharply with its share of the store lamb marketings which at 33,000 were only 3 per cent of the total.

Several factors combine to make Inverness such an important centre for store hogs. These are:

- (1) The distribution of Cheviot lambs during the autumn to the eastern lowlands near Inverness (Map 43),
- (2) the fact that a large number of these Cheviots are the smaller, slower maturing types,
- (3) the distribution of a considerable number of Blackface lambs during the autumn to glen farms south of Inverness (Map 42),
- (4) the semi-arable nature of these glen farms and also of a considerable proportion of the farms and crofts which receive Cheviots,
- (5) the sequence of marketing of store and fat hogs and the local versus non-local demand for these.

It is above all the Cheviots which give rise to the importance of Inverness as a centre for store hogs. Indeed, 23,000 or over half the total hogs marketed at Inverness during 1966 were Cheviots. The distribution of a large number of Cheviot lambs to farms near Inverness does not, in itself, explain the large number of them sold as hogs, however. The high proportion re-sold as store hogs arises because a lot of the small farmers and crofters in the Easter-Ross - Black Isle - Inverness area are able, or find

it suitable, to fatten only a small proportion of the Cheviot lambs they purchase during the autumn. The small proportion fattened on these farms and crofts is partly due to their semi-arable nature (i.e. more suitable for storing than fattening) and partly to the slow-maturing rates of the South Country Cheviots and croft-type North Country Cheviots which form the bulk of their supplies. Blackface hogs, of which 13,000 were sold at Inverness, account for most of the remaining supplies. Most of these Blackface hogs come from farms in the glens south of Inverness where the feeds available are more suitable for storing than for fattening. Considerable numbers of these, too, are bought as lambs during the autumn but considerable numbers are also bred by the farmers there and kept on in-bye fields. This does not mean that all the Blackfaces bred or bought by these farmers are resold as hogs, but rather a high proportion are not able to be fattened and so are marketed as store hogs.

These factors explain how the large supply of Cheviot and Blackface store hogs arises in the vicinity of Inverness, but to understand why these supplies are larger than are found in similar situations elsewhere it is necessary to consider demand. By the months of March and April most of the lamb crop of the previous year is fattened and only a few of the present year's lambs are suitable for slaughtering or rapid fattening. It is during this period of low home-bred supplies that imports from the Antipodes are so important in the British market. However, even with these imports, the demand for fat sheep is greater than the supply and hence prices for fat hogs rises during these months. Moreover, there are very few areas where supplies of fat hogs are surplus to local demand. The north of Scotland, from Inverness to Thurso, is one of the most important

surplus areas because (a) most of the lambs fed in this area are Cheviots which do not fatten until the spring, (b) there is little local demand (i.e. the local consuming population is small in relation to the supplies available). The existence of this surplus supply attracts wholesale butchers and grazier-slaughterers from Scotland and north England. In particular, it attracts these that require small fat hogs for the Liverpool-Manchester and London markets. These buyers travel north in March and April to buy fat hogs at Thurso, Dingwall and Inverness. Moreover, it is their presence in the north at this time of year which gives rise to the selling of store hogs at Inverness. In other words, the practice of buying store lambs to sell as store hogs would probably not be as common if it were not for the fact that the buyers come there in any case.

However, whilst in the north, the buyers are eager to obtain as many supplies as possible and are willing to pay high prices for advanced store hogs which can be slaughtered immediately or after short keep. Thus, the practice of keeping on store lambs to sell as advanced store hogs has arisen and Inverness has become a regular stopping place for these buyers on their spring trip(s) to the north. Indeed, during 1966, 9,000 of the 13,000 Blackface store hogs and 16,000 of the 23,000 Cheviot store hogs were bought by this type of purchaser, i.e. by grazier-slaughterers or wholesale butchers.

Elsewhere in Scotland no single market handled as many store hogs as Inverness. Indeed, no single region's markets sold in total as much as Inverness alone in the Highland region.

Region	Number of Hogs Sold by breed during 1966 at all markets (recorded and unrecorded)					
	Blackface	Cheviot	Greyface	Half-Bred	Down-Cross	Total
Highland	12,700	22,600	2,000	-	2,000	39,300
N. East	300	900	1,700	1,100	1,800	5,800
E. Central	13,600	1,000	11,600	700	1,700	28,600
S. East	2,800	5,300	2,600	2,900	15,300	28,900
S. West	12,700	2,200	8,500	1,200	1,700	26,300
Scotland	42,100	32,000	26,400	5,900	22,500	128,900

The particularly low number sold in the North-East Region is difficult to explain but appears to be mainly due to the greater importance of turnips, alone or with grass, as a feed for sheep in that region. This gives rise to fewer store hogs being sold because most farmers can keep on their unfinished lambs (home-bred or bought as stores) to fatten after December on turnips and hence they do not need to sell them as store hogs. Of course, turnips are an important feed elsewhere, but fewer farmers have this crop and hence they often must sell their unfinished lambs once the turnip feeding season commences.

The importance of the Perth markets in the East-Central Region is to be expected, but it may appear surprising that Aberfeldy, with a throughput of 3,000, is the next largest centre. Its importance derives from the practice of glen farmers moving their Blackface lambs off the hills on to in-bye fields and selling them as lambs in November and December or even later as hogs in January and February (see also pp. 264-265).

The South-East Region resembles the North-East in that most feeders

have turnips and hence can keep on the unfinished lambs after December. However, even with turnips not all of the lambs, in particular the heavier, later born Down-Crosses out of Half-Breds, can be finished and hence considerable numbers are sold as store hogs. Another contributing factor, to be discussed more fully below, is that these and other breeds of hogs fetch good prices when sold to grazier-slaughterers and wholesale butchers from Scotland and North-East England.

With the exception of Live Stock Marts in Stirling no single market in the South-West Region handled more than 5,000 store hogs during 1966. The predominance of the Blackface and Greyface breeds is to be expected in view of the patterns of breeding and movement discussed in the previous section.

#### Movement from Markets

For reasons previously discussed (pp. 215-216), the distribution of store hogs was not mapped. However, the numbers bought by each type of buyer and the distribution by county within Scotland and England is given in a series of tables (Tables 41 to 45 and 52).

#### Types of Buyers

The numbers of hogs of each breed bought by the different types of buyers during 1966 were as follows:



Breed	Number bought by:				Total
	Scottish		English		
	Farmers <sup>1</sup>	Grazier-Slaughterers	Farmers	Dealers <sup>2</sup>	
Blackface	17,000	20,400	-	4,700	42,100
Cheviot	8,900	8,700	6,400	8,000	32,000
Greyface	14,700	11,200	500	-	26,400
Half-Bred	3,400	1,500	1,000	-	5,900
Down-Cross	6,100	8,800	4,700	2,900	22,500
Total	50,100	50,600	12,600	15,600	128,900

<sup>1</sup>Includes those bought by dealers, then sold to farmers

<sup>2</sup>Includes grazier-slaughterers.

#### Scottish Farmers

The 40 per cent of total supplies bought by Scottish farmers is 20 per cent less than their share of total supplies of lambs sold between July and December and reflects a continuation of the trend, begun in October to December, for farmers to take a smaller and grazier-slaughterers to take a larger proportion of the total (p. 243). Tables 41 to 45 show that most of the hogs were moved from markets to farms within the same region. The main exception of this was Inverness market, from which the majority of the hogs were distributed southwards to farms in the other four regions. There were also some other inter-regional movements, such as from Stirling and Edinburgh to the East-Central Region, but these can be thought of as local movements which incidentally cross regional boundaries. And, because of the short distances involved, dealers were of little significance in any of the movements (Tables 41 to 45 and 53). Hence, with the exception of Inverness market, the vast majority of the hogs came from and were distributed to farms within the same areas. Moreover, in most

cases the hoggs were moved between lowland farms of the same general type, transfer occurring because for one reason or another the farmer selling could not, or did not wish to, finish his hoggs. Indeed, considering Scottish farmers alone, there are very few regular buyers or sellers of hoggs. Rather, depending on many factors, including the previous years' lamb crop, the feed available and prices for stores and fat lambs or hoggs, a seller of hoggs one year is often a buyer of hoggs the next. The constant factor is that most of the transfers take place within the feeding areas. This is, of course, with the exception of semi-arable and upland farms near Inverness and Aberfeldy where farmers made a practice of selling hoggs each year.

#### Scottish Grazier-Slaughterers

Most of the grazier-slaughterers who buy store lambs also buy store hoggs. Blackface and Greyface lambs continue to be the main types purchased but Down-Crosses and Cheviots form a more important proportion of hogg than lamb supplies (compare figures on pages 242 and 293). The increased importance of these latter two breeds arises in part because they take longer to mature and hence form a higher proportion of the total store supplies after December. Cheviots in particular are of greater importance as hoggs because they are of the weights most suitable to grazier-slaughterers.

A larger proportion of the hoggs than the lambs bought by grazier-slaughterers were slaughtered immediately. The exact number was not known but, on the basis of several large samples, it would appear that about one half to two thirds of the Blackface, Greyface and Down-Cross hoggs and one quarter to one half of the Cheviots and Half-Bred hoggs were disposed of in this way. The remainder were fed on rented feed, in particular on turnips, in the Dumfries and Lanark - Biggar areas of

the South-West Region, in the Tweed Valley of the South-East Region and in lowland parts of the East-Central Region.

#### English Buyers

As Tables 41 to 45 show, most of the Blackface and Cheviot hogs moved south of the Border were bought at Inverness whilst most of the Down-Crosses were bought at St. Boswells and Hawick. Distribution within England resembled that for lambs in that most of the Blackfaces and Cheviots were moved to the North-West and most of the Down-Crosses were moved to the North-East (compare Tables 51 and 52). These patterns reflect the differences in consumer demand already discussed on page 283. Most of the Blackface and Cheviot hogs moved to Lancashire were bought by grazier-slaughterers for immediate slaughter or short keep (Table 52). On the other hand, in Cumberland almost all the Cheviots (the only breed bought in considerable numbers) were fed by farmers who went north to Inverness themselves or who were supplied by dealers. Regardless of which county they were distributed to, most of the hogs of both breeds were eventually consumed in the Manchester-Liverpool area. Indeed, it is mainly because of the high demand and high prices for lightweight hogs of this type that the movement south from Inverness is economically profitable. Most of the Down-Cross hogs moved to Yorkshire were bought by grazier-slaughterers for immediate slaughter or short keep and were sold at urban centres in the West Riding. In Northumberland, on the other hand, most of the Down-Cross and Cheviot hogs were bought and fed by farmers.

#### II. Lambs Sold with their Mothers

With very few exceptions the store lambs sold from March to June of 1966 were sold with their mothers as "ewes with lambs at foot" (see

pp. 207-208. In time sequence, these were sold prior to the lambs sold from July to December but they were more appropriately left for consideration here because (a) with a few exceptions they were sold at the same markets as hogs and had supply, demand and movement patterns differing from the autumn marketed lambs, (b) they are the least important of the three main types of movement (i.e. autumn lambs, hogs, spring lambs).

#### Supply and Markets

An estimated total of 45,000 lambs were sold with their mothers from March to June, 1966. These were sold at 30 markets, the 14 markets recorded accounting for 80 per cent of the estimated total movement (Tables 33 and 47-50).

The estimated throughput by type for each region was as follows:

Region	Number of Markets		Estimated Total Throughput of Lambs Sold, with Mothers' Breed Being:					
	Recorded	Not Recorded	Black-face	Cheviot	Grey-face	Half-Bred	Down-Cross	Total
Highland	1	-	574	1245	112	272	-	2203
North-East	3	1	4634	2675	725	2325	550	10909
E. Central	3	-	6383	581	249	308	325	7846
S. East	4	2	1503	2317	598	2850	980	8248
S. West	3	13	12517	817	872	797	350	15353
Total	14	16	25611	7635	2556	6552	2205	44559

Since most of ewes were crossed, the lambs produced by breed were different. Thus, about two thirds of 25,600 lambs produced from Black-face ewes were Greyfaces and only one third Blackfaces, the 7,600 lambs produced from Cheviot ewes were about one third Cheviots, Half-Breds and Down-Crosses and all the 11,200 remaining lambs, that is, from Half-Bred, Greyface and Down-Cross ewes, were Down-Crosses. Furthermore, a

high proportion were twin lambs, this being indicated by the fact that the 44,600 were produced from 30,000 ewes (Tables 47-50).

A small proportion of the lambs sold with their mothers were sold by hill or upland farmers, but the vast majority came from lowground areas. Moreover, the most common type of seller is one who maintains a flying flock but does not want to keep it over the summer. Hence, it is not surprising that Blackface ewes with Greyface lambs at foot form the bulk of the total, Blackface cast ewes being the most common type used for lowland flying flocks. Another common type of seller is one who has a regular flock, tups his cast ewes and keeps them over the winter to sell in the spring.

#### Buyers and Movement

Almost all the ewes with lambs at foot were bought by Scottish farmers. Indeed, none were recorded as going to England and only 300 were bought by grazier-slaughterers. Dealers were also of no significance because of the local nature of the movements (see Tables 47-50).

Store lambs marketed during the spring are sold with their mothers because, at the time of sale, they are still on their mothers' milk. After weaning, most of the ewes, being cast, are fattened for slaughter. Most of the lambs too, are fattened but a small number are sold again as store lambs during the autumn.

#### Other Sheep for Feeding

In addition to the 1.32 million store lambs and hoggs marketed during 1966, there were 158,000 ewes sold for feeding. The supplies by breed and the period when marketed were as follows:



Breed	Numbers Sold (Estimated Totals):		Total
	July to December	January to June	
Blackface	85,200	33,800	119,000
Cheviot	23,200	5,500	28,700
Greyface	) negligible	4,700	4,700
Half-Bred		1,800	1,800
Down-Cross		1,400	1,400
Total	108,400	49,200	157,600

The proportion of total supplies accounted for by the hill breeds is even higher than their proportion of total ewes (Table 1) because: (1) less in proportion of the hill ewes, when cast, are fed on the farms where they were formerly used for breeding, (2) more in proportion of the hill ewes entering the store markets are used for feeding rather than for breeding, (3) a considerable number of the cast hill ewes bought during the autumn for breeding by lowland farmers are sold for feeding (as ewes with lambs at foot) during the spring.

Considering the ewes sold without their lambs, total supplies were 123,000, of which 108,000 were sold from September to December and 15,000 (almost all Blackface ewes) were sold from January to March. Those sold during the autumn period were marketed at over 70 of the 90 centres throughout Scotland whilst those sold during the later period were sold at the same centres as hoggs (Tables 39, 40, 46 and 47). Generally speaking, supplies of autumn marketed ewes were drawn from the same areas as Blackface and Cheviot store lambs (compare Maps 42, 43 and 49). Also, although not mapped, winter supplies came from similar areas as the corresponding breed of hoggs, i.e. from upland farms where the ewes, when removed from the hill,



were kept on in-bye fields for later sale and from lowland farms where the ewes were bought in the autumn for fattening, but some could not be handled this way so were sold again as stores.

About three quarters of the 108,000 ewes sold from September to December were recorded, the output by breed and region being shown in Table 33. The types of buyers and numbers purchased by each were as follows (from Tables 39 and 40):

Breed	Number Marketed	Number Bought by:				
		Scottish			English	
		Farmers	Dealers	Grazier-Slaughterers	Farmers	Dealers
Blackface	85,200	50,600	1,500	30,000	2,000	1,100
Cheviot	23,200	12,400	-	3,900	6,000	900
Total	108,400	63,000	1,500	33,900	8,000	2,000

The distribution to Scottish farmers is shown in Tables 40 and 41 and on Map 49. Little further comment is required other than that, with the exception of the Highland Region, most movements involved a transfer from hill to upland and lowland farms within the same general area.

As with lambs, some of the ewes bought by Scottish grazier-slaughterers were slaughtered immediately and the remainder were fed on rented fields. However, unlike the lambs, the vast majority of the ewes, when fat, were sold in the Glasgow area rather than in England. This difference arises because ewe mutton is not in high demand in the English markets grazier-slaughterers supply but it finds a ready market with butchers catering for Glasgow's working class.

The few ewes sent south of the Border were distributed as shown in Tables 51 and 52.

The ewes sold from January to June require little comment; the 30,000 sold with their lambs being distributed to farmers in Scotland and the 15,000 sold earlier being disposed of in much the same way as those sold from August to December.

### Summary

The main or salient features of this chapter are given in point form below and together with Tables 56-61, they provide a summary of the movement of store sheep for feeding.

(1) 3.72 million lambs were produced in the spring of 1966 from a total breeding flock of about the same number. 1 million of these were used as breeding replacements and the remaining 2.72 million were fed. Of those fed, 1.4 million were fed on the farms where they were bred and 1.32 million were sold as stores (Tables 30 and 58).

(2) 87% of the 1.32 stores were marketed as lambs between July and December, 9% as hoggs from January to June and 4% as lambs with their mothers from March to June (Table 55).

(3) Almost all of the lambs were sold by farmers who bred them but a considerable proportion of the hoggs were sold by farmers who bought them as stores in the autumn.

(4) The store lambs sold from July to December were marketed at 88 marts throughout Scotland. In contrast, supplies of hoggs and lambs sold from January to June were marketed at only 30 marts and came mainly from upland and lowland farms in the east and south; that is, few were drawn from the Highlands and Southern Uplands.

(5) 1.06 of the 1.32 million stores remained within Scotland and the other .26 million were moved south to England (Tables 58-61).

(6) Scottish grazier-slaughterers bought almost 1/4 or 249,000 of the

stores staying within Scotland, of which they slaughtered 114,000 immediately and fed the rest, chiefly on rented fields. Most of their supplies were of the Blackface and Greyface breeds. Indeed, these two breeds accounted for 196,000 of the 249,000 and represented 34% and 17% respectively of total marketings of Blackface and Greyface lambs and hoggs (Tables 56 and 57). Of whichever breed, supplies were drawn from a wide area but most of the 135,000 fed were fattened in the South-West, South-East and East-Central Regions. Almost all of the 114,000 slaughtered immediately were killed in the South-West Region where the grazier-slaughterers have their residences and slaughtering facilities.

(7) 94% of the .81 million stores distributed from markets to Scottish farmers were transactions involving farmers selling and farmers buying but the other 6% involved farmers selling to dealers who sold them again at other markets to farmers. Dealers' activities were especially important in effecting transfers of Cheviot and Half-Bred lambs from Caithness to the South-East via the three Edinburgh markets.

(8) 70% of the .81 million stores distributed to Scottish Farmers involved movements from markets to farms within the same region and the other 30% involved inter-regional transfers.

(9) 4/5 of the .26 million stores sent to England came from south Scotland, in particular from the South-East Region which supplied 3/5 of the total. The other 1/5 were drawn from the Highlands and far north of Scotland (Tables 58, 60 and 61). 3/5 of the .26 million were purchased by English farmers at Scottish markets and 2/5 were purchased by English dealers and grazier-slaughterers. 2/5 of the English supplies were Down-Cross lambs and most of these went to North-East England. Another 2/5 were Blackface and Cheviot lambs and most of

these went to North-West England.

(10) In summary then, the most important movements were:

Highland Region: Of .22 million stores marketed, 27% were moved to farms within the region; 55% were moved to other regions within Scotland and 18% were moved to England. And, since none were moved into the Highlands from other regions, it was a net exporter of 73% of .22 million or .164 million stores.

North-East Region: Of .19 million stores marketed, 60% were moved to farms within the region, 33% were moved to other Scottish regions and 7% went to England. However, .032 million stores, chiefly Cheviots from Inverness and the Sutherland markets, were imported so that the net outward movement was only .044 million.

East-Central Region: Excepting for 1,000 stores moved to the North-East Region and 1,000 to England, all the stores marketed within the East-Central Region moved intraregionally. Moreover, 103,000 were brought in from other Scottish regions making this the only region in Scotland with a net inflow of stores (Table 58).

South-East Region: As far as Scotland alone was concerned, the South-East was a net importer of stores during 1966, 14,000 stores being moved out whilst 84,000 were moved in. However, 156,000 were moved to England which left the overall figure at 86,000 net exports. As mentioned in (7) above, dealers were important movers of lambs from Caithness to the South-East.

South-West Region: 73% of the .47 million stores marketed in the South-West Region were bought by farmers or grazier-slaughterers to feed or slaughter within the region. Another 18% were distributed to the East-Central and South-East Regions and the balance went to England. 55,000 stores were imported, chiefly from the Highlands and

far north, giving the region a net export of 78,000.

(11) Although the distribution patterns of store lambs of each breed overlapped to varying degrees, there were noticeable differences arising from the interaction of supply, markets, rates of maturity and distribution of suitable feeds. The vast majority of Cheviot, Half-Bred and Down-Cross stores were marketed and distributed for feeding off corn stubbles, foggage, grass and turnips in the eastern arable areas. In contrast, most of the Blackfaces were produced in the western hill areas and distributed for feeding off grass, foggage and rape in the east central and south western dairying areas. Greyface lambs bridged the gap, as it were, between these two groups.

## CHAPTER IV

## MOVEMENT OF SHEEP FOR WINTERING

In the two preceding chapters the movement of store sheep for breeding and feeding have been examined. A third type of movement, the movement of sheep for wintering, will be the subject of this chapter. It resembles the other two in that the sheep are moved between farms of different ownership but differs from them in that the ownership of the sheep does not change. Rather, sheep from hill farms are wintered or 'agisted' to upland or lowland farms on a rental basis and ownership of the sheep remains in the hands of the hill farmer.

Origin and Development of Sheep Wintering

The away-wintering of sheep on a rental basis is, and has been for many years, so common and widespread a feature of hill farming management that it is very difficult to know precisely when or where it was begun. However, it is known not to have been undertaken on an extensive scale until the stocking of the hills. Previous to this, sheep were kept near the township settlements at lower elevations all year round and, in addition, were housed during the winter to protect them from the depredations of climate, wolves and clan raids and to protect crops and young trees.<sup>1</sup> It is true that in south Scotland the flocks spent part of the summer beyond the head dykes<sup>2</sup> and in a sense their removal to lowground during the winter can be thought of as away-wintering. However, this system was not universal even within south Scotland and, in any case, the sheep were not on the higher hills nor were they sent away on a rental basis.



As with so many present-day features of sheep farming in Scotland, away-wintering of hill sheep on a rental basis appears to have begun in south Scotland. The earliest reference to this practice was made in respect of a farm in the Melrose district in the year 1669,<sup>3</sup> by which time it had been found that sheep could be kept on the Southern Uplands, if not for the entire year, at least for the greater part of it. Although no specific reason for away-wintering was given in this early reference, later references in the same general area suggest that the most important cause was not, as might be expected, severity of winters but rather the diseases which afflicted the sheep if they were kept all year on the hills. Although unknown then, later investigations have shown that 'pining', as the malaise was known, was caused by a lack of cobalt in the soil of the area.<sup>4</sup> Although ignorant as to its specific cause, hill farmers did know that removal of the entire flock to lowland pastures for 4 to 6 weeks prevented the disease<sup>5</sup> and this practice soon became a standard feature of management on farms where it occurred. However, away-wintering for this reason was by no means universal but rather was confined to particular geological formations of the south-eastern Borders where cobalt deficiencies were greatest. Other than for this reason, sheep were removed from the Southern Uplands only for short periods during severe snowstorms; one such storm and the 'fleeing' of sheep to lowland being graphically described in the First Statistical Account of the Parish of Eskdalemuir in Dumfriesshire.<sup>6</sup>

The removal of sheep from the hills on a regular basis for all or a considerable part of the winter did not become common until the Highland hills were stocked. This process, involving a mass movement of flockmasters, shepherds and flocks from the Southern Uplands to the

Highlands during the period 1750 to 1825 has been described in Chapter I. Although not mentioned there, the new environment resulted in important modifications in the south Scotland system, including reduction of stocking densities, keeping gimmers eild and the agisting of sheep to upland or lowland farms. These modifications had in common the fact that they were all designed to make hill sheep farming an economic enterprise under the harsher hill conditions of the Highlands. Indeed, even after the virtual disappearance of the township settlements, it was a commonly-held belief that sheep would not survive on the Highland hills owing to the severity of the winter.<sup>7</sup> However, with these adaptations, the south Scotland system was successfully introduced to the north. Then, as time went on, some of the practices developed in the Highlands were introduced to south Scotland. In particular, lower stocking densities and away-wintering were introduced to the western Southern Uplands and occurred because the improved Blackface breed required somewhat better treatment than the previous types.<sup>8</sup> Paradoxically, it was in the south-eastern Borders, where away-wintering in its modern sense began, that it was least common by the second half of the 19th century.<sup>9</sup>

Away-wintering as it was developed in the Highlands and western Southern Uplands differed in several respects from its earlier form in the south-eastern Borders. First, the sheep were removed from the hills for longer periods, varying from 6 months in the far north to 4 or 5 months in the south-west. A second difference, giving rise to the first, was that the main reason for removal from the hills was severity of winters. This may appear strange in view of the fact that hill conditions in the south-east are as cold as or colder than elsewhere in Scotland. However, it was not so much the coldness of winters

but rather the combination of wetness, wind (exposure) and poor grazings which led to away-wintering from hill farms outwith the south-east. Disease, in particular the braxy associated with grazings in the milder west-Highland area,<sup>10</sup> was also a contributing factor but it was not the main cause as was 'pining' in the south-east. Third, and related to the other two factors, was that usually only part of the hill flock was away-wintered. Specifically, it was the spring born lambs during their first winter as ewe and wether hoggs<sup>11</sup> which were most commonly removed from the hills. These, rather than the entire flock were removed because it was the younger sheep particularly which died or suffered retarded development if wintered on the hills. However, by about 1900 the wether system had virtually disappeared so it was only the ewe hoggs which required wintering.

The essential features of the system of away-wintering developed by 1900 have remained much the same up to the present day. However, there have been several noteworthy changes in associated features, one of which is changes in methods of transport to winterings. The original method, walking the sheep, restricted movement to nearby winterings but this was soon replaced by longer distance transfers, first by rail and now by road. Another important development since 1900 has been increased rentals for winterings, i.e. grass fields on the uplands or lowlands. From the earliest days until about 1930, winterings were relatively easy to obtain, at first because there was an abundance of unused 'sweet' grass in the form of reverted croft lands<sup>12</sup> and later because of the conversion of tillage to grassland in lowland areas owing to declining cereal prices (pp. 155-157). However, in recent years winterings have become much more difficult to obtain due to a revival of cereal growing and a general trend towards

intensification. Thus, prices for sheep winterings have risen during the last 20 years<sup>13</sup> from 25s. per head for 5 months' wintering to £2 to £2. 10s. per head, an increase of important proportions even allowing for the fall in value of currency. Therefore, in recent years hill farmers and agricultural researchers have been seeking for possible alternatives to away-wintering.

### Present Day

One of the main difficulties in establishing the relative advantages of home- or away-wintering is that many of the factors involved are difficult to measure in economic terms. If the matter could be decided on grazing units alone the task would be a relatively easy one. If this were so, a farmer could calculate the amount by which his ewe flock would have to be decreased if the ewe hogs were home-wintered and, after converting this to economic terms, he could decide which was the better course. And since on the average 1 ewe hogg is equivalent in grazing terms to about  $\frac{3}{4}$  to 1 ewe, the decision would be relatively easy. Two examples are given below, one in favour and one not in favour of away-wintering:

#### Example I:

- Assumptions:
- (i) ewe hogg equivalent of  $\frac{3}{4}$  ewe
  - (ii) costs of away-wintering (including transport) £2. 5s.
  - (iii) lambing rate 70 per cent
  - (iv) value of each lamb £4

- (a) Cost of home-wintering £2. 2s. - i.e. reduce ewe flock by  $\frac{3}{4}$  of a ewe for each ewe hogg home-wintered; costs are  $\frac{3}{4}$  of £2. 16s. (70 per cent of £4) per ewe hogg.
- (b) Cost of away-wintering: £2. 5s.

Decision - home-winter because it is 3s. per head cheaper.

Example II:

- Assumptions:
- (i) 1 ewe hogg equivalent of  $\frac{3}{4}$  ewe
  - (ii) costs of wintering (including transport) £2. 5s.
  - (iii) lambing rate 90 per cent
  - (iv) value of each lamb £4

(a) Cost of home-wintering £2. 14s. - i.e. reduce ewe flock by  $\frac{3}{4}$  of a ewe for each ewe hogg home-wintered; costs are  $\frac{3}{4}$  of £3. 12s. (90 per cent of £4) per ewe hogg.

(b) Cost of away-wintering: £2. 5s.

Decision - away-winter because it is 9s. per head cheaper.

However, in practice the decision is rarely as easy to make as in these examples. This is so because other factors, less capable of being rendered into economic terms, are involved.

The most important of these other factors involves differences in the growth and development of home-wintered and away-wintered hogs. In terms of weight of carcase and fleece the differences can be measured and converted into economic terms. In fact, several experiments involving these considerations have been carried out by the colleges of agriculture and the conclusion in each case was that, although the away-wintered hogs were heavier in carcase and fleece at the end of the winter, the home-wintered hogs drew level or surpassed them by the end of the summer.<sup>14</sup> In other words, the home-wintered hogs were as large as the away-wintered hogs at the first breeding or gimmer stage. However, size and weight are not all that has to be considered. Rather, the critical factor of growth and development of the reproductive tract has to be taken into account. When this is done, the away-wintered

hoggs usually have the advantage because of more kindly conditions during the early development period of the tract.<sup>15</sup> Thus, although the home-wintered hoggs draw level in size and weight, they suffer throughout their breeding life from a less-well-developed reproductive tract, an important factor in terms of difficulties and deaths at lambing and size of lambs produced. Comparisons along these lines are, however, very difficult to make and are often not mentioned or far too easily dismissed.

Another factor which is difficult to measure in economic terms is that of hardiness. Basically, the argument is one of assessing to what extent away-wintered hoggs become too 'soft' for subsequent hill conditions. More specifically what is the death rate and general condition of home-wintered and away-wintered ewe hoggs, not only during their first winter, but in subsequent winters as gimmers and ewes? Like the comparison of reproductive tracts, this comparison is difficult to calculate because of its long term or delayed effects which would require more time to record than is available to most hill farmers. Moreover, what was true for one particular hill farm might not be true for another, even if the farms were in close proximity.

From this discussion it will be apparent that it is very difficult to generalise, at least with any degree of accuracy, upon the subject of ewe hogg wintering. However, on the basis of numerous interviews with agricultural advisers, various published works and a postal questionnaire, it was possible to gain an insight into the general aspects of sheep wintering as it exists in Scotland at the present time.

#### Home- and Away-Wintering

There are few extensive areas in Scotland where all the hill farmers



away-winter their ewe hoggs and, conversely, there are few extensive areas where all of them are home-wintered. However, areas of considerable extent can be recognised where the proportion handled in each way is more or less uniform. These uniform areas or regions arise, of course, because the main factors influencing movement, such as severity of winter, type and quality of vegetation, and incidence of disease, occur together in recognizable areal patterns.

#### Hill Sheep Farms

Wintering practices on hill sheep farms as opposed to crofts will be considered first. It can be seen from Tables 62 and 63 that away-wintering varies considerably from one hill area to another and that the same general patterns which existed in 1942-43 also exist to-day. Before discussing these patterns, however, it is necessary to clarify the information shown in the tables. The 1942-43 survey applies to all three of the main hill breeds (Blackface, Cheviot, Zetland) and involves only hill farms where flock sizes were more than 300 ewes. The 1966-67 survey, carried out by the writer with the aid of the Blackface Sheep Breeders Association,<sup>16</sup> also applies to hill farms where flock sizes were more than 300 ewes, but it applies only to Blackface hill flocks. This latter statement requires the qualification that the data for Skye and Sutherland concerns the Cheviot breed. These data were not collected during the main survey but were obtained later from farmers and road haulers. The aim of this supplementary data was to provide, if not the proportion home- and away-wintered (Table 63), at least some indication of where farmers in these areas send their ewe hoggs for wintering. A further qualification is that neither survey is statistically valid in the sense of being by recognised

sampling methods. Rather, the surveys are simply the results of questionnaires answered by a number of hill farmers with flocks of over 300 ewes. Nevertheless, the data were felt to be useful as a general guide to the more important aspects of ewe hogg wintering in Scotland. Credence is given to this statement by the great degree of similarity between the results of each survey where the data are comparable and by checking the results with agricultural advisers and farmers in each area.

Central Highlands: A combination of factors gives rise to the high incidence of away-wintering in the central Highlands (the Cairngorms and Monadhliath mountains including the hill areas of Perth, Angus, Aberdeen, Kincardine, Stirling, Dunbarton and central and east Inverness). The most important of these are (1) winter climate, (2) amount and type of winter vegetation, (3) stocking densities and extent of farms. Although it is true that the lowest average winter temperatures occur in the central Highlands it is not this that causes away-wintering of ewe hogs. Indeed, it has long been recognised by hill farmers and has recently been verified by the Hill Farming Research Organization that low temperatures in themselves are not a serious deterrent to home-wintering of ewe hogs (see p. 18 and footnote 33, Chapter I). Rather it is the heavy and long-lying snowfalls of the central Highlands which are the most important climatic factor leading to away-wintering. The effects of this factor are indirect, however, and are expressed through their influence on access - access by the sheep to hill grazings and access by farmers to the hill areas. Heavy and long-lying snowfalls not only make it difficult for hill sheep in the central Highlands to get access to winter grazings but, more importantly, they prevent access to particular types of

vegetation. Specifically, whereas the sheep can usually find feed in the form of heather, green vegetation (i.e. mosses, lichens, grasses) is either buried beneath snow in the corries and valleys or is at high altitudes made difficult of access by the snow at lower levels. Even without the heavy snowfalls, winter feed would be sparse because, more so than elsewhere in Scotland, heather is the predominant type of vegetation in this area.<sup>17</sup> Heather is valuable as winter feed if found in conjunction with green vegetation but of itself of limited use. In addition, supplementary feed in the form of hay which the farmer might have on hand for the most critical winter periods often can not be taken to the flock because of blocked roads. Moreover, hill farms in this area are so large and the flock is so scattered that the farmer is often unable to reach his flock on foot. These factors make winter feeding a problem for the entire hill flock but they bear most harshly on the younger sheep, that is, the ewe hogs. This is so because the more experienced, stronger and older sheep, not to mention the deer, take the bulk of the limited feed which is available. This is critical for the ewe hogs because they are still growing and developing and it is they which most need the winter feed. For all these reasons, then, it is not surprising that away-wintering of ewe hogs is commonly practised in this area.

West Highlands (Argyll, Bute, West Inverness): Like those of the central Highlands, west Highland hill sheep farms are stocked almost exclusively with the Blackface breed. However, hill grazings in the two areas differ in that heather is only one of a great variety of important vegetation types in the west Highlands in contrast to its 'blanket-like' coverage of many parts of the central Highlands. The presence of this greater variety of vegetation and the generally

milder climate of the west contribute to a smaller proportion of the ewe hoggs being away-wintered in this area. However, the fact that about  $1/3$  to  $1/2$  of the ewe hoggs are sent away shows that winter hill conditions are still very severe, although severity is not in terms of coldness, snowfall or vegetation but rather is related to wind, rain and disease. Some winter precipitation falls in the form of snow in the west Highlands but rain is the most common form. And, as is often the case, when this is combined with high winds and lack of shelter, it takes its toll of the sheep's winter reserves. Another factor, arising out of the mild and wet climate, is that of disease. Above all, the braxy takes a high toll of home-wintered sheep and, as experience has shown, it strikes the ewe hoggs most severely. In fact, on some farms the death rate is so high from braxy that this alone is sufficient reason for away-wintering.<sup>19</sup>

Western Southern Uplands (Lanark, Renfrew, Ayr, Wigtown, Kirkcudbright, Dumfries): The winter environment on the western Southern Uplands closely resembles that of the west Highlands. Thus, a combination of wind and rain is the most important factor giving rise to away-wintering. Disease is less of a problem but, on the other hand, in parts of the Southern Uplands winter grazing is more sparse than in most parts of the west Highlands. Indeed, in the Upper Ward of Lanarkshire and in the Rhinns of the Kells in Galloway much of the hill area is occupied by bare rock or scattered clumps of vegetation.

North Scotland (Ross, Sutherland and Caithness): Since north Scotland is stocked mainly with Cheviots it was not covered by the 1966/67 survey (see p. 311). However, as is shown in Table 59, away-wintering was quite common in 1942/43 and the indications are that the

same general situation exists at the present time. The popularity of away-wintering from hill farms in this area involves an understanding of the historical background of sheep breeding. As was shown in Chapter I and subsequently, when farmers from the Borders introduced Cheviots to the north they altered their southern management policies to suit the new environment. Stocking rates were lowered, gimmers were left eild<sup>20</sup> and ewe hoggs were away-wintered, all of these being a reflection of the harsher winter conditions in the north. Partly as a result of these innovations, the larger North Country type was evolved which made away-wintering even more desirable and ensured its continuance. And, as several recent experiments by NOSCA have shown, leaving the gimmers eild and away-wintering the ewe hoggs are still, in the final analysis, more profitable in this area.<sup>21</sup> Without them, it is quite probable that the North Country stocks would deteriorate in size, weight and condition; indeed, if they were not practised it is quite likely that Blackfaces would 'answer better' on many of the harsher hills. 'Harshness' in its northern context is due in part to the direct effects of wind, rain or snow and low temperatures on the sheep themselves but it is mainly due to the way in which these climatic factors affect the duration of the winter grazing period. With the exception of the hill areas near the west coast where the Gulf Stream has a moderating effect, grazings deteriorate in mid-August and do not, so to speak, come to life again until mid-March or later. This winter grazing period is one to three months longer than elsewhere in Scotland and arises because of lower temperatures, higher winds and, not least, greater exposure. This extra period of demand on the bodily reserves of the sheep would be particularly marked in its effects on the still growing and maturing



younger sheep and it is mainly to avoid them that the ewe hoggs are away-wintered and the gimmers left eild.

Eastern Southern Uplands (Peebles, Selkirk, Lothians, Roxburgh and Berwick): Although away-wintering began in the south-east Borders (pp. 304-305), it is less common there than in any other hill area in Scotland. The reason why so many of the ewe hoggs can be successfully home-wintered is basically that hill conditions are less harsh. Although it is colder than the west, rains, wind and disease are less of a problem. On the other hand, although these hills are cold they are not as cold nor do they receive as heavy or long-lying snowfalls as the central Highlands. Also, grasses and heather, together which are the best winter grazing, are both found on most hills of the south-east, including the hills stocked with Blackfaces rather than Cheviots. Nevertheless, away-wintering is necessary from hill farms where high altitudes, lack of shelter and heather are found in association. An extensive one of this type is the Pentlands in Midlothian which are stocked with Blackface sheep (Tables 62 and 63). Elsewhere, however, such farms occur in isolation or in very small groups and hence home-wintering is much more common than away-wintering throughout most of the south-east. Where home-wintering is practised, the ewe hoggs are usually wintered on the hills with the regular breeding flock, the hoggs having sacking attached to their hindquarters (breeking) to prevent tugging. Also, stells (glossary, p. 446) commonly provide shelter for all types of sheep during severe snowstorms.



## Crofting Areas

The two surveys on which much of this analysis is based were deliberately designed to exclude the crofting areas because preliminary investigations showed that the crofters seldom send their ewe hogs to winterings on a rental basis. The reasons for this are many, including capital available, flock size and management, availability of alternative forms of wintering and accessibility to rented winterings. These various factors can be divided into two main groups, positive and negative, the former assisting and the latter necessitating home-wintering.

The most important factors in the positive group and the way in which they enable or assist home-wintering are as follows:

- (1) Alternative Winterings - Most crofters with hill flocks have land at lower levels to which the ewe hogs, and in some cases the entire flock, can be removed during the winter. These winterings are of diverse types, including (a) lower parts of the hill which have been improved by removing the surface layer, adding shell sand and fertilizer and sowing with improved grasses, land of this type being known as 're-seeds' and being especially common in Zetland and Lewis and Harris,<sup>22</sup> (b) in-bye arable or croft land - found in all crofting areas, (c) machair land - essentially the same as re-seeds but of natural origin, found at or near sea level in the outer islands from North Uist south to Tiree, (d) indoor-wintering on crofts - a practice that is especially common in Lewis and Harris where individual flocks are small and former dwellings or 'black houses' are often suitable for this purpose.
- (2) Size of Flocks - Most crofters have small flocks in the range of 5 to 100 ewes and, excepting for sheep stock clubs, these are individually

owned and managed. The small number of ewe hoggs makes it easier for crofters to take advantage of the winterings available.

The negative factors and the way in which they discourage or prevent away-wintering are as follows:

- (1) Lack of Capital - Even allowing for the small size of crofters' flocks, an outlay of £2 to £2. 10s. per head for each ewe hogg away-wintered is more than many crofters can afford.
- (2) Accessibility to Rented Winterings - It is generally agreed that crofters who do send their ewe hoggs for wintering on a rental basis have better stocks as a result. In particular, the away-wintered hoggs suffer less from diseases, especially from liver-fluke which thrives in wet soils with a high lime content such as are commonly found in the crofting areas. However, since the main wintering areas are along the east mainland in the Easter Ross-Black Isle area, this requires shipment by sea and then by land for most crofters with resulting high charges for transport. Moreover, given the small number of ewe hoggs owned by most crofters, it is even less economic because an entire lorry waggon must be hired but it can only be partially filled (i.e. capacity 200 to 250 ewe hoggs). In Skye, particularly, co-operative efforts in the form of sheep stock clubs are common, but elsewhere they are the exception rather than the rule.
- (3) Flock Management and Quality - A large number of crofters, especially in Zetland and Lewis and Harris, keep sheep only as a sideline and consequently they are often neglected. Specifically, there has been a tendency to home-winter them on the hill without examining possible alternatives, some of which, including away-wintering, might be more profitable in the long term.

Although these factors operate throughout the crofting region, they

are combined somewhat differently in different parts of it. Owing to a combination of poor grazings and neglect, sheep stocks in Zetland and Lewis and Harris are of generally poor quality. Attempts have been made to remedy this in recent years by, amongst other things, encouraging the crofters to provide more adequate winterings for their ewe hogs. Steps in this direction, such as the construction of hogg houses<sup>23</sup> and the re-seeding of about 14,000 acres of low-lying hill, have been taken and it is here that future improvements will probably be made. Away-wintering on a rental basis is not a viable alternative because most crofters lack the necessary capital, and in any case, transport costs to the nearest suitable winterings are virtually prohibitive.

On the islands south of Lewis and Harris, with the exception of those on Skye, crofters are able to winter their ewe hogs at home, either on the low hills or on the machair grazings common to the southern islands. Costs of mainland winterings, including transport, partly explain the popularity of home-wintering but it is also due to the suitability of the home winterings. The high quality of sheep stocks on these islands attests to this and contrasts with the northern islands where stocks are generally of poor quality and, until recent years at least, home-wintering was making a virtue out of necessity.

Although home-wintering is probably the most common method for crofters on Skye and on the mainland, away-wintering on a rental basis is also important. One reason for this is lower transport costs to the eastern lowlands and another is the greater number of co-operatives. The latter, in the form of sheep stock clubs, are especially common on Skye and it is largely these rather than individual crofters who

away-winter hogs from the island. This is so not only because lorries can be filled and hence transport costs per head reduced, but also because the members of sheep stock clubs are, generally speaking, more dependent upon their sheep stocks for income. In consequence, they are more willing to invest money in hogg wintering in the hope of reaping greater returns later in the form of higher quality breeding flocks and better lambs for sale.

Finally, it should be noted that not all the crofters do, in fact, have pure-bred hill flocks on hill grazings. Crofters with upland or lowland crossing flocks or, more rarely, with no breeding sheep at all, are most common in the southern islands of Tiree, Lismore and Iona and also along the east coast from Caithness to Inverness (Map 5). Like their farming counterparts, these crofters do not have to decide between home- and away-wintering of ewe hogs because, almost without exception, conditions are suitable at home. Moreover, in many cases replacements are purchased as hogs or gimmers so that this is not necessary.

### Winterings

In the preceding section the regional similarities and differences in home- and away-wintering of ewe hogs from hill farms and crofts were examined in some detail. It is the purpose of this section to outline the main characteristics of farms on which ewe hogs are wintered on a rental basis. This will involve an analysis of the requirements of the hill farmer on the one hand and of the wintering farmer on the other.

In this discussion, it has been assumed that it is only from the hill sheep farms, where winter conditions are most severe, that ewe

hoggs are sent away for the winter months. This is, in fact, the case for Scotland but it should be noted that it need not necessarily be so. Indeed, just south of the Border in the counties of Cumberland and Northumberland it is common practice to away-winter ewe hoggs from the uplands but to winter those on the higher hills outside, if possible, or in sheds.<sup>24</sup> This is done because farmers there have found that hoggs wintered away from the harsher hills become too soft for subsequent winters on the hills whilst those sent away from the uplands do not find adjustment difficult. The pattern in Scotland differs from this because: (a) there are more upland winterings to which hill ewe hoggs can be sent without becoming unsuitable for use on the hills, (b) generally speaking, the hill environment is much harsher in Scotland, thus limiting home-wintering, (c) for various reasons, including traditional practices and the purchasing of replacements as hoggs or gimmers, few upland farmers away-winter ewe hoggs. It is not, of course, the purpose of this study to examine differences with England but this particular example is useful in that it shows how the apparently obvious is often not so and also because it draws attention to the problem of hill hoggs becoming too soft if away-wintered.

This problem is a very real one but the hill environment is so harsh that many farmers feel that any softness incurred by away-wintering is the lesser of two evils. In any case, there are many winterings available on upland farms where conditions are, although better than the hill, not good enough to cause undue softness. In addition, even the lowland winter conditions are not necessarily too soft because of the generally harsh winter climate in Scotland and the way in which the hoggs are fed. It has been traditional for winterers, i.e. farmers



receiving hill ewe hogs for wintering, to feed ewe hogs on grass alone or grass and turnips, the turnips being fed for 6 weeks or so in the early spring to put the hogs in a good but not a soft condition for return to their owners. It is interesting to note that in the days when both ewe and wether hogs were sent to winterings, the ewe hogs, as now, spent only a short time on turnips but the wether hogs were fed on grass and turnips throughout the winter.<sup>25</sup> This was done for precisely the same reason as to-day, that is, it was recognised that the ewe hogs might become too soft on a better diet. This was not a problem for wether hogs, at least in the latter part of the 19th century to which this refers, because they were fattened before the next winter, either on the hill farms or on upland or lowland farms to which they were sold as store hogs.

Apart from this consideration, the hill farmer's main concerns are that the winterer does not have a breeding flock of his own and that the winterings are available for the desired period. A hill farmer, wherever possible, avoids sending his hogs to a farm where a breeding flock is maintained because (1) he feels, probably with justification, that his sheep would receive only second best treatment or concern, (2) there is a great risk of his sheep picking up diseases from the owner's flock. This point requires the qualification that if the owner's flock is kept on a separate part of the farm, disease will not be a problem, but this is rare and, in any case, there is still the problem of priorities. Period of wintering is important, too, because the period for which the hill farmer wishes to have his ewe hogs off the hill is not always convenient for the winterer. This problem is particularly acute in the South-West Region where dairy farmers are the main winterers (pp. 327-328).



The requirements of the winterer can perhaps be best understood by considering the types of farms which do winter ewe hoggs. Although all types of upland and lowland farms do so, it is the smaller dairy and stock breeding and rearing farms which take the majority of them. The main reasons for this are:

(1) Dairy and stock breeding farms have grass available for sheep during the winter when the cows are housed. Hence any sheep enterprise which can be carried out for the winter only, such as ewe hogg wintering on a rental basis, the buying of ewe lambs to sell as ewe hoggs and the maintenance of flying flocks, are all popular.

(2) Winterings are associated with the smaller types of dairy and stock rearing farms for several reasons. First, the smaller farms tend to be on second quality arable or semi-arable land and tend to be on the uplands rather than the lowlands. This is important in terms of suitability for ewe hogg wintering because of the factor of hardness. Second, smallness, in itself, is important because many of these small family farms lack the capital to purchase sheep for the winter and hence are eager to take ewe hoggs on a rental basis. That said, there is still the problem of why other types of farms do not take more ewe hoggs than they do. Farms of the other types, that is, the various arable types and the larger lowland dairy farms, do not commonly winter ewe hoggs on a rental basis because (a) on the more intensive arable farms there is no grass, (b) even if grass is available, it is often more profitable for the farmer to use it for other livestock enterprises such as the breeding and/or feeding of cattle or sheep; moreover, the capital to purchase these is more commonly available and, in any case, conditions might be too good for wintering hill ewe hoggs successfully, (c) on some of the better dairy farms, which tend

to be the larger ones on the better soils, priority is given to the dairy stock to the extent of leaving the winter grass unused; this pays off in the long run through increased spring output, but is often not possible for the smaller dairy farmers on poorer land who require the winter income from hogg wintering and, in any case, often have rougher grazings not suitable for grazing productive cows (this rougher grass is grazed during the spring and summer by young dairy stock (followers) and dry cows).

Having established that it is the smaller, marginal types of dairy and upland breeding and rearing farms which most commonly winter ewe hogs, it now remains to analyse their distribution.

There are many dairy farms within the South-West Region (Map 4) which are either marginal (semi-upland or upland types) or small, but it is only in central and north Ayrshire and in parts of Lanarkshire that there is a marked concentration of farms which combine both characteristics. Hence, it is in these areas which ewe hogg wintering is concentrated (Table 63). Elsewhere, in particular in Dumfries, Galloway and south Ayrshire, marginal dairy farms tend to be larger and to combine, much more commonly than on those in north Ayrshire and Lanarkshire, in-bye arable land with hill grazings. These two features, larger size and the combination of land types, make breeding sheep and/or beef cattle much more common and, needless to say, more profitable than ewe hogg wintering as a supplementary source of income to dairying. However, these factors do not explain why ewe hogg wintering on a rental basis is very common in the western part of Lanarkshire but not in east Lanark and Stirling or in West Lothian, in all of which areas small and marginal dairy farms are found. The main reason for this apparent anomaly is that the buying of ewe lambs

to sell as ewe hogs is concentrated in the eastern areas, this being so because of their proximity to Lanark market (Maps 13 and 18, pp. 113-114).

Since most stock rearing farms are on the uplands (compare Maps 4 and 10), the factor of farm size is relatively more important in determining which ones take hogs for wintering. However, there are also other important factors to take into account, including shelter, location with respect to transportation routes leading from the hill areas, and traditional or historical influences. As is shown on Map 4, upland stock rearing farms are found, outwith the crofting areas, in Caithness, in an arc extending from Dingwall around the Moray Firth and including a large portion of the Black Isle and most of Speyside, Deeside, Donside and the Angus and Perthshire glens and, finally, a small area in the Roxburgh-Dumfries border area. However, as is shown by Table 60, ewe hogg wintering is common only in the arc from Dingwall round to Morayshire (including Speyside). In the case of Caithness, the relative scarcity of ewe hogg wintering arises, in part, because information was not collected from very many hill farms in north Scotland (p. 311). However, it is known that few are, in fact, wintered there in any case because: (a) most of the upland farms have breeding flocks of their own, in particular Cheviot pure-bred or partially crossed flocks, (b) related to (a) is that the upland farms tend to be larger than those in the main wintering areas. The lack of wintering on upland farms in the Roxburgh-Dumfries border area is explained by the same two reasons and by the fact that few ewe hogs are away-wintered from the adjacent hills. The lack of ewe hogg wintering in Morayshire (other than Speyside), Aberdeen and the Angus-Perth glens is somewhat more difficult to explain. One important

factor is that, although many of these farms are small, they often combine upland in-bye land with upland and hill grazings. This arises because the glens, including upper Donside and Deeside, are too narrow for entire farm units to be located in the valley bottoms; rather, they extend upslope and include the different types of land mentioned above. This combination has led to a similar situation as in the Galloway valleys whereby breeding sheep and cattle are kept (pp. 31-32, see also Map 6 for the location of upland flocks of Blackface ewes producing Greyface lambs).

Another important factor is transportation links with the main hill farms sending ewe hoggs for wintering. In earlier times when railways were used for transporting sheep, the shortest distance to wintering grounds for the great arc of hill farms from Sutherland around to Perth, in all of which areas a considerable number of ewe hoggs have been and still are away-wintered (Tables 59 and 60), was to the Black Isle, eastern Inverness-upper Moray-Nairn and Speyside areas. Moreover, this is true to-day even though road transport is used since the roads follow the same general routes as the railways. Specifically, the A9 connects the northern areas to the Black Isle-eastern Inverness area and it, together with the A86 and A82, connect Perth and Inverness to Speyside, Moray and Nairn.

Considered in broader terms, the main reasons for the importance of the Inverness-Moray-Nairn and Speyside wintering area are:

- (1) Many of the upland stock rearing farms are small family units, some of which are crofts, e.g. Black Isle, and others are what could be termed 'croft like' farms.
- (2) These farmers lack the capital or do not have the inclination to maintain sheep breeding enterprises. It is true that a considerable

number of farmers in the Easter Ross-Black Isle-eastern Inverness area buy in small, low-priced Cheviots for re-sale as store or fat hogs (pp. 288-290) but there are many who find ewe hogg wintering the best winter sheep enterprise. Also, for many years farmers in upper Moray, Nairn and Speyside have emphasised beef cattle breeding and rearing rather than sheep breeding; indeed, more so than in Aberdeen itself, this area is famous for its Aberdeen Angus stocks. Hence, as shown on Maps 9, 14 and 15, upland sheep breeding is conspicuously absent here. However, during the winter grass is available for hogg wintering, the income from which is, of course, quite welcome as a supplement to the main enterprise of beef cattle.

(3) They are centrally located with respect to the main hill areas from which ewe hogs are sent for wintering and are connected with them by roads.

(4) Contributing to (2) is the fact that the upland farms in this area tend to be located entirely on the uplands. That is, unlike their counterparts in Angus, Perth and Aberdeen, they usually lack extensive hill grazings and this, too, has decreased the importance of sheep breeding. It is interesting to note that this comment also applies to Speyside which is wide enough to accommodate entire farms within its valley sides.

(5) Extensive forests in this area provide excellent winter shelter for ewe hogs.<sup>26</sup> In contrast, lack of forests or alternative shelter is an important factor contributing to fewer ewe hogs being wintered in nearby upland areas, for example in parts of Aberdeen.

Finally, before discussing the patterns of lines of movement it is convenient to examine some important differences between winterings in the two main areas. First, there is a difference between the length



of time for which it is convenient for the two types of wintering farms, dairy and upland stock rearing, to keep ewe hoggs. Dairy farmers are generally eager to take hoggs from mid-October to early or mid-March, whereas upland stock rearing farmers will take them as early as the end of August and keep them as late as early April. The main reasons for this difference are that dairy cows are not well suited for grazing with sheep. This is especially true of small, intensive dairy farms where there is either little rough grazing or, if there is, it is required by followers or dry cows. Moreover, on these small farms intensity of production is essential so that the farmer keeps his cows on grass pastures as long as possible, milk produced in this way being considerably cheaper than that produced from cows fed indoors on conserved or purchased feeds. On the other hand, many stock rearing farms have rough grazings which can be used by sheep whilst beef cows graze the better grass fields. In any case, it is less essential for the beef cows to remain outside on the grass fields because they are fed on a lower ration during the winter. This is so because they do not have to produce milk regularly as do dairy cows but rather are required only to produce a good calf once a year. It should be noted that these points of difference were also largely responsible for the fact that dairy farmers who buy ewe lambs usually sell them as ewe hoggs whereas stock rearing farmers usually sell them as gimmers (pp. 110-112).

Another difference, arising in part from those just discussed, is that dairy farmers tend to charge somewhat more for wintering than do stock rearing farmers. If comparable periods are taken, say from mid-October to mid-March, the usual prices charged, exclusive of transport costs, are (a) dairy - £2 to £2. 10s., (b) stock rearing - £1.10s to £2.



A third difference is that hoggs wintered on dairy farms are usually kept on grass alone whilst those on stock rearing farms are fed for the last 4 to 6 weeks on turnips. The reason for this is that few turnips are grown in the dairy region, at least in the parts of it where ewe hoggs are wintered (Map 35).

Fourth, it is a common, although not universal, practice in the stock rearing areas for those who specialise in hogg wintering to act as intermediaries between the hill farmer and the owner of the winterings. Under this system, the intermediary (i.e. specialist winterer) makes arrangements both with a number of hill farmers to winter their hoggs and with a number of winterers to take them. Then, during the wintering season, he moves the ewe hoggs amongst the various fields in accordance with the weather and the feed available. In this way, the care of the hoggs is entirely the responsibility of the intermediary, his services being rewarded by the price arrangements he can make with both hill farmers and owners of the winterings. The origin of this system is obscure but it is probably a carry over from the days when wether hoggs, too, were wintered. At that time turnips were required throughout the entire winter period<sup>27</sup> and often one farmer alone could not provide the amount required. Rather than go to the trouble and expense of arranging for the rental of several different winterings and the movement of the hoggs amongst them, hill farmers found it desirable to resort to the more flexible and more convenient system of intermediaries. In addition, this was suitable for owners of the winterings, many of whom were only too pleased not to have the responsibility for the ewe hoggs, not least because of their unfamiliarity with sheep. In all probability, the system developed in this way, and, moreover, it is still quite common to-day for much the same

reasons, i.e. flexibility and convenience. Even the factor of different types of feed is still important. For example, one farmer may have only grass to rent and another only turnips. If each were to operate individually neither would be an attractive wintering farm but if the two farms were combined through the activities of the specialist winterer, full use could be made of both crops. In contrast, intermediaries are very uncommon in the dairy wintering areas. This lends weight to what has been said about the origin of the practice because hogs have always been wintered mainly on grass alone in the dairy areas so that the need for movement amongst fields of different ownership did not arise. Finally, although the specialist winterers receive a monetary reward for their services, their prices are as low as any obtaining in the north which, as was seen, are considerably lower than the south. The explanation of their low prices lies in their scale of operations. Indeed, one of these specialist winterers takes 10,000 ewe hogs from 20 hill farms and moves them amongst numerous rented fields. This is perhaps an unusually large scale operation but, even making allowances for this, it is obvious that overheads will be lower for operations of this type.

### Movement

The general patterns of ewe hogg movement are readily understood in terms of the preceding discussion and hence require little further explanation here. Thus, although the ewe hogs are distributed over a wide area, they are sent above all to Ayr (central and north) and Lanark (central and west) in the South-West Region and to Speyside, upper Moray and Nairn, the Black Isle and Easter Ross in the north-east (Table 63). However, when the lines of movement within this general

pattern are analysed some further explanation is required.

The most notable feature requiring analysis is the transfer of a considerable number of ewe hogs from central and south Scotland, in particular from Argyll, to the north-east (Speyside, Moray Firth) area for wintering. There are many reasons why some farmers prefer to send their ewe hogs to this area, the most important ones being as follows:

(1) On the higher, harsher hills it is desirable to delay the return of ewe hogs until mid-March to late April because it is not until then that hill grazings are sufficiently advanced to support the hogs, at least without their losing weight and condition. And, since it is easier to arrange for away-wintering for the desired period in the north-east than in the south-west (pp. 327-328), the former is sometimes preferred.

(2) The extra transport costs involved in sending hogs to the north-east are offset by lower costs for wintering.

(3) Some farmers prefer the north-east even at a higher price because their ewe hogs return in better condition and thrive better subsequently than if they were sent locally or to other areas in the south-west. The reasons for this are that the hogs wintered in the north-east escape the debilitating effects of wind, rain and disease of the west and also they receive turnips for part of the winter. Not all farmers in Argyll would agree, for it is only true for particular farms with particular grazings and management practices. Indeed, as illustrated by extracts from a letter from a farmer near Tarbert (Loch Fyne) in Argyll,<sup>28</sup> the movement from even one hill farm can be very complex:

in seeking a farm to winter ewe hoggs one tries (1) for an area or even a particular farm which you know from observation of your neighbours who have a similar type of hill, that it will suit your particular hoggs, (2) in spite of the cost of freight, the North-East charge considerably less than Ayrshire, (3) in many places in Ayrshire the sheep must be moved off at an earlier date due to the pattern of farming, [ i.e. early potatoes - this was not discussed above because not many dairy farms in the early potato belt winter ewe hoggs; however, in this case the farmer probably met with the situation ] , (4) we winter two lots in Bute, one at home, and 600 others [in total] at Lesmahagow [Lanark] and near Banff. In this way we split the risk of a severe winter. We have found from experience that hoggs from different hirsels seem to winter differently at some farms, i.e. of 4 hirsels only 2 will winter at all reasonably at home, of the two farms in Bute, one is no good for the hoggs off my low hirsel but suits the two high hirsels very well. The other farm on Bute does suit the low hirsel, etc. Also, the ones sent to the North East have a better fleece - this may be because they are put on turnips part of the time. However, the danger of feeding turnips is that if they return home to a prolonged winter, the following year they might suffer quite severely compared with other hoggs who have had to rough it rather more right through the winter. Also, the North East is drier and the change is probably beneficial.

Another important line of movement differing somewhat from what might be expected is that from hill farms in Sutherland to Aberdeen. The main reasons why some Sutherland farmers prefer to send their hoggs there rather than to closer winterings are: (1) these farmers feel that the Black Isle-Inverness-Moray-Nairn and Speyside areas are "sheep sick", i.e. too many ewe hoggs have been wintered there with the result that the land has become ridden with sheep diseases, (2) the Aberdeen wintered hoggs return in better condition and clip about a pound more wool per hogg than those wintered in the other areas. Again, it must be stressed that these reasons hold true only for particular farms; indeed, as is shown in Table 60, a considerable number of hoggs from Sutherland were sent to the Black Isle, Moray, Nairn and Speyside. In this instance, it would appear that it is the hill

farmers who wish to have large, healthy stocks and are willing to pay extra costs for them, that send their hoggs all the way to Aberdeen. It should be noted that Sutherland is the only representative within the sample of an area of the larger North Country Cheviots. Hence, it is to be expected that some farmers there would require somewhat better winterings than those required, for example, by the Sheep Stock Club in Skye with South Country Cheviots or the Perth, Inverness and Argyll farmers with Blackfaces. Indeed, as is indicated by the following extracts from a letter, the Speyside area, which can be taken as representative of the hardier type of wintering grounds, draws sheep from a wide area:

I used to own [ early 1960's ] a hill farm in Roxburgh and sent my 200 Blackface ewe hoggs to Speyside. Wintering costs were 30s/head plus haulage of £70 both ways which gives 7s/head or 37s/head total charge for the period mid October to mid April. I chose Speyside because it was (a) cheaper, (b) the hoggs were looked after better, (c) they always did well on return. They were all sent in one large double-decker lorry which helped to keep costs down.<sup>29</sup>

Another important line of movement not mentioned previously is that from hill farms in Dunbarton, Stirling, Perth and Angus to nearby wintering farms in Angus, Perth and Fife (Table 63). This line of movement is one of long standing. In fact, the indications are that in the recent past it was much more important than now. Its decline has arisen because some of the farmers, in particular those with intensive arable farms, do not winter hoggs now because they have less grass than formerly owing to intensification of cereal production. However, hogg wintering is still popular amongst the semi-arable and upland farmers of the area. Of course, as shown in Table 63, not all the hill farmers in these areas send their ewe hoggs for wintering there.



This is to be expected in view of the fact that other, equally suitable winterings, are more accessible to some of the hill farmers. Thus, some ewe hoggs from Stirling and Dunbarton are sent to winterings in these counties and in Lanark and some, indeed the majority, from north and north-west Perth are sent to Speyside, Moray and Nairn.

Finally, the importance of "linked" or "led" farms (glossary, p446 ) in the movement of ewe hoggs should be noted. As shown in Table 60, 5,600 of the 40,600 ewe hoggs in the sample were moved in this way. Unfortunately, most farmers who did this were unwilling to identify the location of their wintering farm and hence very few of these movements could be traced. However, on the basis of the co-operating farmers and numerous other sources, it would appear that the most common situation is one where the linked farms are in the same general area, although on different types of land. For example, the Sutherland hill farms are linked with upland and lowland farms in Caithness and eastern Sutherland and those in north Perth are linked with farms below the Highland line in Perth, Angus and Fife.

### Trends

It has been shown that wintering costs have risen considerably in the last 20 to 25 years and that alternatives have been and are being sought by hill farmers and researchers. A rough estimate of the changes which have occurred during the past 25 years can be made from the two sample surveys. On the assumption that the number of ewe hoggs per hill sheep farm in 1941/42 was about the same in all the main hill regions (i.e. all excepting the North-East Region where, in any case, there are few hill sheep farms - see also Table 4), the proportion of total hoggs away-wintered in 1941/42 was just over half ( $1192 \div 2159$ ). According to the data collected, the figure for 1966/67



was much the same (see calculations below):

(1) Number of ewe hoggs in sample = 52,000, i.e. excluding 8,000 for Sutherland and Skye for which no data on home-wintering were available.

(2) Number of ewe hoggs away-wintered = 27,000, i.e. excluding 8,000 for Sutherland and Skye and also 5,500 sent to linked farms because in the 1941/42 survey only hoggs sent for wintering on a rental basis were designated as "away-wintered".

These figures, although only estimates, would appear to indicate that there has not been any marked decrease in away-wintering. This is contrary to the commonly held opinion of many hill farmers, hauliers of ewe hoggs etc. and probably arises because there has been a considerable decline in the number of hill sheep in particular areas. For example, it is known that hill sheep numbers have declined by 20,000 in Kirkcudbright (from 123,000 in 1941/42 to 103,000 in 1966/67),<sup>30</sup> with a consequent decrease in away-wintered ewe hoggs. This decline is largely the result of afforestation in that area and it has, of course, been noticed by hill farmers and hauliers in the vicinity. However, the total figures for subsidised hill sheep (Table 1) have, in fact, increased since the 1940's. Unfortunately, the number of these on hill sheep farms in the 1940's and the 1960's cannot be compared because of a reclassification of hill sheep farms.<sup>31</sup> However, it is unlikely that the number on hill sheep farms has altered to any marked degree, that is, it is probable that somewhere in the vicinity of 1.3 million ewes (Table 4) were maintained on hill sheep farms (of the present day classification) in both periods. Hence, the decline in areas such as Kirkcudbright has been offset by increases in other areas. For example, a proportion of the increase of 59,000 subsidised

hill sheep (from 323,000 in 1941/42 to 382,000 in 1966) in Argyll undoubtedly occurred on hill sheep farms and this has probably led to an increased number of ewe hoggs being away-wintered (the proportions home- and away-wintered are assumed to have changed little - compare Tables 62 and 63). However, as is often the case, farmers have been quicker to notice the decreases than no change or slight increases; hence the popularly held belief that afforestation has reduced the number of hill sheep and that ewe hogg wintering has decreased in consequence of this and also because of more home-wintering. It also appears that beliefs about home-wintering are not substantiated in fact. It is true that many more hill farmers than formerly are discussing home-wintering; moreover, many have been attempting to do this rather than away-winter, but on the basis of questions asked in the 1966/67 survey and from numerous subsequent enquiries it would appear that, in the majority of cases where home-wintering was attempted as an alternative to away-wintering, the results were unsatisfactory. In particular, home-wintering in sheds has not lived up to advance expectations because in most cases it has (a) cost too much, (b) increased deaths and loss of condition due to climate and diseases, not least diseases attributable to the crowding which occurs in sheds, (c) the ewe hoggs become accustomed to being sheltered and fed and find it as difficult or more difficult to adjust to life on the hill than do away-wintered hoggs. Indeed, as has been recommended by one recent investigator, the main future for shed-wintering probably lies in the housing of some or all of the ewe hoggs which are already home-wintered.<sup>32</sup> In other words, hoggs now sent away for wintering should be handled this way in the future, at least in so far as the alternative of wintering in sheds is concerned. Then, too, home-wintering outdoors

on the hill or on the in-bye necessitates a reduction in the number of ewes (p. 308). If wintering costs continue to rise this method may become more popular, but at current prices there is not much incentive for implementing it. In any case, other reasons for away-wintering would still have to be contended with, e.g. deaths and loss of condition due to climatic hazards and disease.

There are, however, indications that there has been a considerably greater decline in away-wintering of ewe hoggs from crofts. Unfortunately crofters were not members of the Blackface Sheep Breeders Association (p. 311) nor were they included in the 1941/42 survey; hence no quantitative data were available to indicate the extent of the apparent decline. In any case, the decline has been a slow one, beginning 30 to 40 years ago and continuing to the present. At the present time away-wintering on a rental basis from crofts is not common. The most important source area is Skye, in particular from the Sheep Stock Clubs, one of which was included in the 1966/67 survey. However, on the basis of information supplied by agricultural advisers in the crofting areas and by MacBraynes (D. MacBrayne Ltd ship most of the stock to and from the crofting islands off the west coast), it would appear that until the 1930's at least considerably more ewe hoggs were wintered away from Skye and also a large number, perhaps 25,000 to 30,000 were sent away to the mainland from Lewis and Harris, the Uists, Barra, Mull, Tiree, Coll and other islands. The most important reasons for this decline in away-wintering have been economic, including increased shipping rates and increased charges for wintering. Of course, these factors have also affected hill sheep farmers but they have not as yet caused as marked a decrease in away-wintering as they have in the crofting areas. The reasons for this difference are again

largely economic; the crofters simply do not have as much money as hill farmers to devote to wintering. Then, too, most crofters have other sources of income and hence the deterioration in their sheep stocks due to home-wintering is not as serious as it would be for hill farmers. In any case, advisory and financial assistance has been given to the crofters in recent years which has helped them to home-winter their ewe hogs, e.g. financial assistance and advice concerning the construction of hogg houses and the re-seeding of lower parts of the hill grazings (see also pp. 317 and 319).

Although once again no quantitative data were available, it would appear that there has been a significant decrease in away-wintering from upland farms. As with the crofts, the total number away-wintered from these farms is not large as compared with hill farms, but it was probably greater in the past. In this case, however, the decline is probably largely due to afforestation, replanting having been concentrated on the upland rather than the low-hill sheep farms. This would, of course, reduce the number of breeding sheep and, in consequence, decrease the number of ewe hogs for away-wintering.

The decline of away-wintering from crofts and upland farms, although probably not more than 50,000 in total, has undoubtedly been a major reason for the belief that the wintering of ewe hogs has declined to a much greater degree than the samples indicate. To put the decline into perspective, if the estimate of half the ewe hogs being away-wintered from hill sheep farms is correct (p. 334), then about 175,000 in total were away-wintered both in 1941/42 and 1966/67, viz. 1.3 million ewes and gimmers require about .35 million ewe lamb/hogg replacements and of these half, or 175,000, are away-wintered. Hence, the decline of about 50,000 would represent less than a quarter of the

total, how much less depending on the unknown number still away-wintered from crofts and upland farms. The reason why the decline on the upland farms and crofts has received attention out of proportion to its overall importance is probably because there are so many more of these types of farms than hill sheep farms. And, since each upland farmer or crofter sends, on the average, a much smaller number of ewe hogs to winter than a hill farmer, the same numerical decline in away-wintering would affect a greater number of the former than the latter. For example, 1,000 ewe hogs might be sent away by ten upland farmers, i.e. 100 each, whilst the same number would be sent by one hill farmer. And, if the one hill farmer began to home-winter it would be unlikely to cause much concern but if the ten upland farmers did this or dispensed with their flocks because of afforestation, it would cause concern, particularly if they were all in one area.

#### Away-Wintering of Other Sheep

In addition to the 40,000 ewe hogs, several thousand other sheep were away-wintered from the farms surveyed in 1966/67. Most of these were ewes and gimmers but there were also several instances of away-wintering of wether hogs. Of whichever type, these came from hill farms in the central Highlands, in particular from high-lying farms on the Monadhliath Mountains in the vicinity of Tomatin and Newtonmore in Inverness and from similar farms on the Cairngorms, including parts of Inverness, north Perth, west Aberdeen and north Angus. This same general area was singled out as being important for away-wintering of sheep other than ewe hogs in a previous survey<sup>33</sup> and the indications are that in earlier years of this century and in the last century many more flocks were regularly removed for the entire winter in this area.



The decline in numbers so handled is probably not due to more home-wintering. Rather it is largely due to the dispersal of flocks from the higher hills in this area, first at the time of the increase in deer forests and subsequently for related economic reasons.<sup>34</sup> However the same basic causes of movement still obtain, viz. cold, exposed hills, lack of green vegetation, heavy and long-lying snowfalls (pp. 312-313). Most of these sheep are wintered in Speyside, Moray and Nairn, that is, in the same general area as ewe hoggs from the central Highlands.

## CHAPTER V

## THE SCOTTISH BEEF BREEDING HERD:

## DISTRIBUTION OF BREEDS AND MOVEMENT OF BREEDING REPLACEMENTS

This and the two following chapters are devoted to an analysis of the movements of store beef cattle. These movements will be treated much less fully than those for store sheep, partly because of the limited time available and partly because there are many characteristics of the geography of store sheep movement which also apply to store cattle.

## A. DISTRIBUTION OF BREEDS

Introduction: Beef cattle have been kept on Scottish crofts and farms from time immemorial but it was not until about 1800 that recognisable breeds were developed. At that time the Highland breed had emerged as the predominant type in the west Highlands and Islands whilst Galloways held sway in the south-west.<sup>1</sup> Other than these beef breeds, the Ayrshire dairy breed, then confined to the county of that name, was the only recognised type.<sup>2</sup> In the eastern areas there were numerous cattle, too, but these were of no distinct breed and were draught animals associated with arable farming rather than for beef purposes.<sup>3</sup> By the end of the 19th century, however, other beef breeds and crosses had been developed, the most important of which were the Blue Grey (White or Cumberland Shorthorn bull crossed with a Galloway cow), the Aberdeen Angus, the Beef Shorthorn and the Beef Shorthorn cross Highland.

During the present century the beef breeds extant during earlier

periods have been modified and perfected but until recently no successful new breeds or crosses were developed.<sup>4</sup> The number of beef cows, too, has been static for most of this century, but since 1945 stocks have increased more than threefold (110,000 to 350,000)<sup>5</sup> and the upwards trend is still continuing. This recent increase is due in large part to the introduction of subsidies, the most important of which are the Hill Cattle and Beef Cow Subsidies, the Calf Subsidy, the Marginal Land Improvement Scheme and the Winter Keep Scheme. Another contributory factor has been the reduction in the proportion of followers, i.e. cattle other than the breeding stocks, in response to the earlier age of fattening and slaughter and to the incentive for breeders to sell their calves before the onset of winter so that the maximum number of subsidized cows can be maintained.

#### Present-Day

The Breeding System: In its broad outlines, the system of beef cattle breeding in Scotland is essentially the same as that for sheep, though it is less developed in a spatial sense. Thus, a vertically integrated system has been developed in which the surplus females from pure-bred hill and upland herds provide replacements for upland cross-bred herds, which in turn supply female replacements for cross-bred herds at lower altitudes. Similarly, hardiness in the hill and upland herds has been achieved to some extent at the expense of fleshing and maturing ability. Hence at each cross-breeding stage, bulls of low-land breeds are used to provide these attributes. And, since the female crosses at one level are used for breeding at the next lower level, the emphasis on fleshing and maturing ability increases and the emphasis on hardiness decreases, with progressively better or "kindlier"

conditions.

#### Breeds and their Distributions

This brief description is useful as a general guide to the systems of beef cow breeding, but owing to the lack of precise data difficulties arise in any attempt to examine it in terms of numbers, breeds and distributions. Information about female cattle is virtually non-existent, at least in officially published form, and this is true for male cattle also, with the exception of A.I. statistics and pedigree herds.<sup>6</sup> Hence, of necessity, the following discussion is based almost entirely upon information gathered by interviews from agricultural advisers, auctioneers, livestock officers and farmers throughout Scotland.

Pure-Bred Herds: The precise number of beef cows in pure-bred herds can not be determined on the basis of existing information but it is known to be a small one. In this regard, the term "Hill Cow Subsidy" is somewhat misleading for it might be thought that most of the cows qualifying for it would be pure-bred as was the case for ewes qualifying for the Hill Sheep Subsidy (Table 64 and pp. 20 - 21). However, this is known not to be true for beef cows and is implied by the fact that most of the cows are on the uplands rather than the hills (Table 65 and Map 50).

Although the number of pure-bred herds is a matter of conjecture, it is known that most of them are confined to the harsher and higher hills and uplands and that two breeds, the Highland and the Galloway, predominate. Galloways are the most important pure-bred herds in the west-central Southern Uplands whilst pure-bred herds of Highland cattle predominate north of the Highland line and are particularly concentrated

in the south-west Highlands (Table 66). There are exceptions to this general distribution; for example, pure-bred Highland herds are found in the Lanarkshire area and pure-bred Galloway herds are kept in parts of Argyll. But, taken as a whole, each breed is predominant in the area with which it has been historically associated and from which it derives its name.

Partially Cross-Bred Herds: Partially pure-partially cross-bred herds are maintained on the same types of farms and in the same areas as pure-bred herds but are far more numerous. As the name implies, part of the herd is bred pure and part of it is cross-bred. In this way, the pure-bred section not only replaces itself but also provides female replacements for the cross-bred section which in turn produces females for sale to farmers with cross-bred herds at lower altitudes. Thus, surplus Galloway or Highland females from the pure-bred section are used for crossing with Shorthorn bulls to produce Blue Grey and cross Highland females, respectively, and these are sold for breeding elsewhere. A small number of the pure-bred male calves are kept for breeding but most of them are sold for feeding along with all the first cross calves. Thus, this system is self-contained except for the purchase of Shorthorn bulls and sometimes these, too, are home-bred. Another common breeding policy associated with the same environmental conditions is to cross all the Highland or Galloway cows with Shorthorn bulls, in which case replacements must be bought-in from the pure or partially pure-bred herds.

First Cross Herds: A large number of the cows qualifying for the Hill Cattle Subsidy and also a number of those qualifying for the Beef Cow Subsidy are based on first cross females. The Blue Grey and cross



Highland cows from the above mentioned herds are important, but equally important are Irish cows, chiefly Blue Greys derived from White Short-horn bulls and Aberdeen Angus or Galloway cows, which are imported at the heifer stage from Ireland.

Among the home-bred cows it is known that Blue Greys are far more numerous than cross Highlanders. This is a reflection of (a) the greater versatility of the Blue Greys, specifically its better adaptability to kindly conditions; (b) the greater number of first cross herds in the "home" area of the Galloway and, arising from this, the natural preference for the first-cross herds in this area to be based on the local product, i.e. Blue Grey. Both these factors, then, have made the Blue Grey the most important breed on the female side for crossing with lowland breeds of bulls on the intermediate uplands. Its area of greatest importance is its home territory of the western Southern Uplands but numerous herds are found in the eastern Southern Uplands and parts of the south-west and central Highlands and on the eastern Grampians (Table 66). Herds based on cross Highland cows are most important in their "home" area, i.e. central-west Highlands and Islands, but the numbers are limited by the amount of land suitable to support them. They are also found in considerable numbers in the north Highlands, especially on the poorer lowland crofts and on the Campsie, Sidlaw, Lammermoor and Pentland hills.

Irish Blue Greys are particularly suitable for the better upland and semi-upland environments of east and south Scotland. And, since it is on this type of land that most of the beef breeding herd is maintained, their numbers are consequently high. They are of greatest importance on the margins of the eastern Southern Uplands and the eastern Grampians from Perth to Aberdeenshire. In the western Southern

Uplands there are a considerable number of herds but there they are overshadowed by the home-bred Blue Greys. This arises in part from the preference for the local product but is mainly due to the fact that the Irish Blue Grey, owing to its thinner skin and coat, is less suited than the home-bred Blue Grey to withstand winter conditions in the South-West Region. In this regard it should be noted that it is not low temperatures so much as the combination of wind and rain combined with moderately low temperatures that are detrimental to the Irish Blue Grey.

Finally, Irish Blue Greys are locally important on better land near Fort Augustus (Great Glen Cattle Ranch), along the Moray Coast to Inverness and in Caithness, but the total number involved is not large.

Other than the above-mentioned breeds, cross Aberdeen Angus cows (produced from Aberdeen Angus bulls mated with Beef Shorthorn or, less commonly, Dairy Shorthorn cows) are the only ones of any real significance. Speyside is the most noteworthy area for cows of this type but they are also quite numerous throughout west Aberdeenshire and Banff, Moray and Nairn. A considerable number, too, are found in the far north, particularly Orkney.

The breeds of bulls mated with these first cross cows are important, too, because together they determine the characteristics of the female progeny which are used in second cross herds at lower levels. As recently as twenty years ago, Aberdeen Angus and Beef Shorthorn bulls accounted for the vast majority but since then the Hereford has overtaken the Beef Shorthorn. Indeed, it would appear that Herefords are now the most important breed of bull south of the Highland line and are running a close second to the Aberdeen Angus in

the eastern Highlands as far north as Aberdeenshire (see also pp.384-385 ). All three breeds of bulls are used on all three breeds of cows, but Aberdeen Angus and Herefords are usually used on Blue Greys (Irish or Home Bred) and Beef (sometimes Dairy) Shorthorns are usually used on cross Highlanders.

Second and Third Crosses: Owing to the progressive decrease of the "hill" strain and progressive increase in the "lowland" strain, second cross cows are maintained only on the better farms in lowland and semi-upland areas. These second crosses, together with Irish Blue Greys and first cross Aberdeen Angus cows, all of which are suited to lowland conditions, form the bulk of the cows qualifying for the Beef Cow Subsidy (Table 64 and Map 50). Angus and Hereford second crosses are important in the eastern arable area which extends from the Merse of Berwick through the Lothians and Strathmore to Aberdeen. North of Aberdeen, however, first cross Angus and Irish Blue Greys and first or second cross Highlanders are important even on the lowland farms, mainly because of harsher lowland conditions in the north as compared with the south. Land suitable for maintaining second crosses is also limited in south-west Scotland, as is implied by the relatively small number of cows in receipt of the Beef Cow Subsidy (Table 64 and Map 50). The limited number of herds kept are chiefly Hereford and Angus but second cross Highlanders are locally important on the lower hills, e.g. Campsie, Ochil and Fintry hills and also on the Pentlands and the Lammermoors.

Hereford and Angus bulls account for most of the matings with these second cross cows. A small number of the female progeny are crossed again with the same breeds of bulls on the best lowland farms, such crossing being analagous to the Down-Cross ewes which are crossed

again with Down rams under similar conditions (p. 190).

Other Crosses: In addition to the breeds and crosses already discussed, there are several minority types which, although of little significance nationally or even regionally, are important in local areas. It is beyond the scope of this study to discuss all of the many local minority types but it is useful to examine some of the more important ones.

On some farms/crofts in south-west Scotland and the west Highlands and Islands, dairy cross cows are mated with beef bulls. In Lewis, and to a lesser extent in Argyll, this takes the form of crossing Beef Shorthorn or Angus bulls with Beef or Dairy Shorthorn cross Ayrshire cows. In south-west Scotland, Ayrshire cross cows are also common (Table 66) and in recent years Hereford cross Friesian cows have become popular; both these types of cows are crossed with Hereford or Angus bulls.

Finally, the Luing breed, developed on the island of Luing near Oban, was registered in 1965, thus becoming the first new breed in Scotland during this century (p. 342). The number of Luing herds are few at the present time but the number will increase rapidly if the high demand for them at recent sales at Oban is any indication. Luing cattle are, in essence, pure-bred Shorthorn cross Highlanders, i.e. Shorthorn x Highland bull mated with same breed of cow and, as such, are most likely to become important in the west-central Highlands and higher hills of the Southern Uplands, that is, in the same general areas where first and second cross Highlanders are important today. However, owing to a higher proportion of Shorthorn blood, the Luing breed may spread to areas which are now stocked with Blue Greys.

## B. MOVEMENT OF BREEDING REPLACEMENTS

At the outset it should be noted that bulls will be omitted from this discussion for three main reasons: (1) One bull services a large number of females and hence the number of bulls required is small; furthermore, a considerable proportion of these bulls are home-bred; (2) Although bull breeding is of considerable importance in monetary terms, it is confined to a few specialist farms; (3) A proportion of the bulls go to all parts of the world, to countries such as Argentina and the United States, and to try to explain these movements was obviously beyond the scope of this study.

In contrast, the production and movement of female breeding replacements involve the commercial beef producer to a much greater degree than do bulls. And, as such, the movement of female replacements is much more important in terms of numbers moved and numbers of farmers concerned. For these reasons the following analysis will be confined to the place of female cattle in the beef breeding system.

Numbers Moved On the average, the breeding life of a beef cow is seven to eight years under Scottish conditions which means that the breeding herd of 342,000 in 1966 would have required about 45,000 breeding replacements. And since 25,000 replacements were moved through the auction markets and very few were moved privately, about 20,000 were home-bred. Not all of the replacements moved through the auction markets were bred in Scotland, however. Indeed, as will be shown, 10,000 were brought from Ireland, leaving only 15,000 to be produced on Scottish farms.

Age and Types Moved This figure of 25,000 replacements comprises animals which were bought as bulling heifers or in-calf heifers



for immediate or subsequent use for breeding on the farms to which they were moved and hence it excludes an unknown but considerable number of female replacements moved at earlier ages. Specifically, it omits heifer calves moved from the farms on which they were bred to other farms on which they would be kept for later sale as bulling or in-calf heifers, and bulling heifers moved to farms from which they would be sold later as in-calf heifers. An analogous situation would occur with sheep if the movements of gimmers were recorded but the movements of ewe lambs and ewe hoggs were not. There are several reasons why these earlier-stage movements were not recorded. First, the heifer calves sold for breeding are not distinguishable from the heifer and bullock calves sold for feeding. And, since the number of calves sold for feeding is far greater than the number sold for breeding (estimate 100,000 for feeding, 5,000 to 10,000 for breeding), both types were included with the movements for feeding. In any case, almost all of these calves for breeding would have been sold again as bulling or in-calf heifers and therefore most of them were eventually recorded at the later stages. A qualification, however, must be made to this last statement, namely that owing to the limited time available it was not possible to trace all the movements of bulling and in-calf heifers. However, estimates of the number moved were obtained from most centres and it was, in fact, these figures which were used to make the estimate of 25,000 already quoted. In addition, the most important sales for each of the main breeds of heifers were recorded in detail, that is, the heifers were traced to the farms where they were used as breeding replacements.

### Movement by Breed

By implication, if not by specific statement, this discussion of breeding systems and breed distributions indicates the most important movements of female replacements. Thus, surplus females from the pure-bred Galloway herds are moved to herds in which all the Galloway cows are mated with White Shorthorn bulls and Blue Grey females from these herds are moved to farms on which Blue Grey cows are mated with Hereford or Aberdeen Angus bulls and so on. This, however, does not indicate at which markets the replacements are sold, nor does it indicate the important lines of movement except in general terms. These features will therefore be examined, beginning with the breeds maintained on the hills and uplands.

Highland and Cross Highland Very few pure-bred Highland in-calf heifers are moved between farms in Scotland because most of the herds based on Highland cows are pure-bred in whole or in part. On the other hand, there are a considerable number of herds in which cross Highland cows are kept for further crossing and therefore first cross Highland heifers must be purchased. Thus, this discussion applies mainly to the movement of cross rather than pure-bred Highland heifers.

The most important markets in Scotland for Highland and cross Highland breeding replacements are Oban and Stirling. These two markets and Dalnally receive supplies from hill and upland farmers in the west Highlands, including west Perth, north Stirling and Dunbarton and Argyll (mainland and islands). From these markets they are distributed to farms at lower elevations in the same general area, on the hills of the central lowlands and on the Southern Uplands (Map 51). In a similar manner but on a smaller scale, Fort William, Inverness and Dingwall gather supplies from the north-west Highlands and distribute

them to local farmers.

Galloways and Blue Greys For similar reasons as for the Highlanders, few Galloways are moved as breeding replacements between farms and hence this discussion applies mainly to the more numerous Blue Greys. The most important market centres are Newton Stewart and Castle Douglas, but Lockerbie, Newcastleton, Hawick and Oban all handle considerable numbers. Markets in Galloway, Dumfries and Roxburgh receive supplies from the central-west Southern Uplands and Oban receives most of its supplies from central Argyll, in particular from the Lorne district. Most of the replacements are distributed within close proximity of the market but some are sent further afield, e.g. to England (Map 52). It should be noted, however, that the movement to England is offset to some extent by the inflow of Blue Greys and Galloways from Bewcastle, Carlisle, Roadhead, Bellingham and Haltwhistle in north England. Indeed, the area centred on Bewcastle and covering much of the surrounding uplands of Cumberland, Northumberland and Westmorland is probably more devoted to these breeds than Galloway itself.

Irish Various types of heifers for breeding, including Hereford cross Friesian, Angus cross Shorthorns and Friesian cross Shorthorns, are imported from Ireland, in particular from Eire. The most important types are Angus cross Shorthorns followed by Friesian cross Shorthorns, both of which, owing to their close resemblance to the Galloway cross Shorthorn or Blue Greys, are commonly called Irish Blue Greys. And, since these account for the vast majority it is convenient to refer to all the Irish breeding heifers as Irish Blue Greys.

It is apparent, by methods which will be discussed in a later section, that about 10,000 Irish Blue Grey heifers for breeding have

been imported into Scotland in recent years. About half of them go directly to farms where they are immediately or subsequently used as replacements, but the others are bought as bulling heifers by farmers who sell them again as about-to-calf or newly-calfed heifers. The initial distribution of the 8,000 or so which could be traced is shown on Map 54. This includes both types of purchaser, that is, those who buy for replacement purposes and those who buy for later resale. It is difficult to trace the resold portion accurately because when they are sold through the auction markets from six to nine months after original purchase, they are not designated as Irish Blue Greys but rather are simply called Blue Greys and hence are indistinguishable from home-bred Blue Greys. However, it is known that the majority of the heifers sold at St. Boswells, Hawick, Perth and Belmont (Aberdeen) are Irish Blue Greys. And, as indicated by the original distribution and these sales (Map 54), most of the Irish heifers were eventually used as replacements on farms in the eastern part of the country. This is to be expected in view of the greater suitability of the Irish Blue Grey for somewhat kindlier conditions than the home-bred Blue Grey (p.345). It should be noted, however, that about 2,000 of the total were not traced, initially or subsequently. Most of these would have been distributed in the same areas as those traced but it is known that several hundreds, perhaps 500, were distributed in north Scotland, to the Moray Firth, Easter Ross and Caithness. Also, the south-west is somewhat under-represented because a considerable number were distributed locally from Lanark market but these were not traced.

Other Crosses      These breeds and crosses account for the vast majority of the breeding replacements moved during 1966. Most of the

others are Angus and Hereford second crosses (p. 347) which are sold at the same markets as Irish Blue Greys and at smaller centres in the east such as Kirriemuir and Forfar. The sellers and buyers are located on the semi-uplands and lowlands in close proximity to each market and therefore movement is of a local nature.

#### SUMMARY

There is a close resemblance between breeding systems and movement of breeding replacements for both cattle and sheep. Thus a full understanding of the integrated breeding system goes a long way towards explaining supply areas and final, if not intermediate, distributions of the replacements for both types of livestock. There is one important difference, however, namely that a large proportion of the cattle for breeding are brought from Ireland but a large proportion of the sheep for breeding are moved to England.

Another parallel with sheep is that the male progeny of the integrated breeding system are almost all available for feeding and a large proportion, particularly from the higher farms, are sold through the auction markets. Thus, in a similar manner as for sheep, this section on breeding systems and the movement of replacements for breeding is logically followed by an examination of the movements of cattle for feeding.



## CHAPTER VI

## MOVEMENT OF STORE CATTLE FOR FEEDING: CALVES

Store cattle for feeding are known to have been moved between farms in Scotland on an organised basis as early as the 16th century.<sup>1</sup> Very little is known about these early movements, however, and they were soon overshadowed or replaced by large scale movement to England. This trade began soon after the Union of the Parliaments in 1707 and reached its peak in the early 19th century at which time about 100,000 cattle annually were taken south of the Border.<sup>2</sup> After this, however, the development of alternate cropping and the adoption of new crops, in particular turnips, the decline of cereal prices, and the construction and extension of roads, railways and steamship lines all contributed to the retention of more and more of the stores to fatten within Scotland.<sup>3</sup> Indeed, even before the end of the 19th century store cattle were being imported from Ireland and by 1930 this trade had grown to 160,000 annually.<sup>4</sup> Since then the import of Irish stores has dropped to about half its former volume but this has been more than offset by increases from other sources. Specifically, imports of dairy stores from England, which were almost non-existent 40 years ago, now total between 70,000 and 100,000 per year and during the same period the annual output of stores from the Scottish beef and dairy herds has increased from 150,000 to 330,000.

Hence, at the present time there are four main sources of store cattle for feeding in Scotland, each with its own characteristic pattern of movements, viz:

- (a) beef stores from Ireland
- (b) dairy stores from England
- (c) dairy stores from Scotland
- (d) beef stores from Scotland

These will be examined, first all together to provide a general view, then individually so that the essential features of each can be analysed in more detail. The detailed analysis has been divided into two main sections, viz. the movements of calves and the movements of older stores. The section on calves has been included in this chapter and follows the general discussion, whilst Chapter VII is devoted to an examination of the movement of older stores. The reasons for this division, based on the age of the stores, are many and will be discussed subsequently. It is sufficient to note here that the primary reason is that most of the farmers who purchase calves sell them again as older store cattle, but most of the farmers who buy older store cattle feed them without further resale and arising from this the patterns of movement for each are considerably different.

#### GENERAL FEATURES

In recent years the total number of fat cattle slaughtered in Scotland has been of the order of 630,000 to 680,000 annually.<sup>5</sup> Of these, 425,000 to 500,000 are clean fat cattle<sup>6</sup> and the others are cast cows and bulls and fat cattle imported from Ireland. The last mentioned are obviously beyond the scope of this study. Cast cows and bulls have been omitted too because, although some are moved through the store markets, they are usually bought by butchers for immediate slaughter or for very short feeding periods. Hence, the following analysis of store movement will deal only with clean cattle.

During 1966 an estimated total of 239,000 beef calves and 133,000

dairy calves were produced in Scotland and these together with 79,000 imported English calves and 79,500 Irish stores would have yielded 479,000 clean fat cattle for slaughter within Scotland over the years 1966 - 1968. This is not, of course, the total number of clean fat cattle slaughtered during the period but rather the total "yield" from the cattle imported or produced in Scotland during one year, 1966. Some of these cattle were fattened where they were bred but the vast majority were moved, often more than once, prior to being fattened (see figures below).<sup>7</sup>

Origin/Type of store	Total Number Moved	Number of Inter-Farm Movements		
		Through Markets	Privately	Total
Irish Beef	79,500	44,500	35,000	79,500
English Dairy	79,000	92,000	69,000	161,000
(Beef	170,000	235,000	25,000	260,000
Scottish (				
(Dairy	92,000	120,000	18,000	138,000
Total	420,500	491,500	147,000	638,500

Irish Stores All the store cattle moved from farms in Ireland to farms in Scotland during 1966 were in a forward condition and were fed on the farms to which they were initially distributed and therefore the number of cattle moved was the same as the number of inter-farm movements. It should be noted here, however, and will be discussed in detail in Chapter VII, that the 44,500 stores moved to farms via markets and also a proportion of those moved to farms privately were transferred from ports of entry to dealers' farms before they were distributed to other farms for fattening. These movements to dealers' farms have not been included in the inter-farm movement totals because the farms are used only as temporary accommodation for the cattle

until they are sold to bona fide farmers.

English Calves Some 10,000 of the 79,000 English calves imported during 1966 were sold through auction markets and the other 69,000 were moved to farms privately. Fifteen per cent of the 79,000 were fed on the farms to which they were moved as calves but all the others were sold again through markets as older stores, giving 67,000 additional movements and bringing the total to 77,000 market movements and 69,000 private movements. Furthermore, about 15,000 or one-quarter of the 67,000 were marketed again at various ages giving a total of 161,000 movements, 69,000 of which were private and 92,000 of which were through auction markets.

Scottish Bred Beef Stores The total output of calves for feeding from the Scottish beef herd during 1966 was 239,000 (Table 67). 110,000 of these were sold as suckled calves and younger calves - 100,000 at auction markets (Table 68) and 10,000 privately or through marketing agencies. In addition, 95,000 stores over one year of age, comprised of 35,000 which had already been moved as calves and 60,000 not previously moved, subsequently gave rise to 150,000 further movements - 135,000 via markets and 15,000 privately. Thus, the total number of movements of beef stores was 260,000 of which 235,000 were through markets and 25,000 were private transactions.

Scottish Bred Dairy Stores The output of calves for feeding from the Scottish dairy herd during 1966 was 132,000 (Table 69). 40,000 were fed on the farms where they were bred and the others were moved on average one and one-half times as calves or older stores before being fattened, to give a total movement of 138,000 - 120,000 through markets and 18,000 privately.

#### Data on Movement

The sources used for the maps and tables of movement will be discussed in detail in the later sections dealing with each of the four main types of store cattle. At this point it is sufficient to note that, with the exception of Irish cattle, the stores moved out-with the auction market could not be traced, at least not on a farm to farm basis. Thus, at the outset, the information available is much less complete than it was for sheep (pp. 66 - 68). However, information was obtained from most of store cattle markets throughout Scotland and this formed the basis for a series of maps and tables of movement. Here, too, there were difficulties not encountered in the analysis of movements of store sheep. The most serious problem was that a considerably higher proportion of the cattle were moved by dealers from markets in one region to those in another. This, in itself, would not have been a serious limitation but, taken together with the fact that there are no dealers' markets for cattle as there are for sheep, it meant that market hinterlands could not be delimited. Thus, for example, it might be known that a certain number of cattle were bought by dealers in the South-West Region and sold soon after purchase at markets in Aberdeenshire, but it was not known at which markets they were sold. However, the distribution from markets to farms was tabulated and mapped in a similar manner to that of sheep (pp. 68 - 73).

## MOVEMENT OF ENGLISH CALVES

## A. SUPPLY

Numbers Supplied    The total number of English calves entering Scotland can be accurately determined from the D.A.F.S. census returns. Since 1965 farmers in Scotland have been required to give the total number of calves under six months old bought and sold in the six months preceding the December and June censuses. This information, together with the number of calves sold slink, i.e. calves sold for slaughter from a few days to a few weeks after birth, can be used to estimate the import of English calves in the following manner:-

- (1) Total calves under six months old sold from December of one year to December of the next year minus the number of calves slaughtered as slink or bobby calves during the same year equals the number of Scottish bred calves under six months sold for rearing and eventual use for feeding or for breeding.
- (2) Total calves under six months bought during the same period December to December minus the Scottish bred calves under six months for rearing equals the import of calves under six months old from England.

This method, of course, gives only the net import of calves under six months from England. However, enquiries at markets indicate that only about 4,000 to 5,000 calves per year go south of the Border, a large proportion of which are slink calves bought by English dealers for slaughter there. Since about 5,000 per year of the imports from England are dairy calves for rearing as replacements and the rest are for feeding, the net import figure closely approximates



to the total number brought into Scotland for this latter purpose. By means of this method, then, the number of English calves for rearing and eventual feeding since 1965 has been as follows:-

Year	Calves less than 6 months old sold <sup>8</sup>	Calves sold sink <sup>9</sup>	Calves less than 6 months old bought <sup>8</sup>	Import of calves less than 6 months old from England <sup>8</sup>
1965	144,409	71,000	178,979	105,570
1966	148,704	74,000	156,802	82,198
1967	150,020	95,000	126,652	71,632

#### Source of Calves

It is well known that the main source area for these calves is the dairying districts of west England and Wales. However, much more detailed information than heretofore has been collected was obtained from a questionnaire sent to a large number of English auction companies and from interviews with dealers and marketing agencies engaged in the calf trade. From these sources it appears that the area from Cheshire southwards to Devon and including Wales normally supplies about 60 per cent of the total brought into Scotland and the remainder come from Lancashire, Cumberland and, to a lesser extent, from Westmoreland and north-east England.

#### Movement from the South of England

Movement from the southern supply area is almost totally in the hands of Scottish dealers who, in addition to their own purchases there, often have buying agents resident in England. Some calves are purchased directly from farmers, but the vast majority are bought at auction markets. The most important markets, with the estimated

number of calves sent annually to Scotland in parenthesis where known, are as follows:

Crewe (7,000), Uttoxeter (200), Oswestry (5,000), Shrewsbury (2,000), Kidderminster, Hereford (1,000), Gloucester, Chippenham, Salisbury (2,500), Exeter (1,600), Taunton (4,000), Shaftesbury (500), Sturminster Newton (5,000), High Bridge, Weston-super-Mare and Glastonbury in England and Abergele, Abergavenny and Carmarthen (5,000) in Wales.

#### Movement from the North of England

The northern source area differs from the southern one in that, in addition to dealers, farmers marketing groups and, to a lesser extent, farmers themselves are important in effecting the transfer to Scotland. The main reason for this difference is that it is only in north England that contacts with Scottish farmers are close enough to allow direct transfer by farmers or farmers' groups. On the other hand, through their larger scale of operations and longer experience in the trade, dealers are able to match supplies to demands over longer as well as shorter distances and hence are important in both areas. Indicative of this difference is that farmers' groups specialize in a more or less standard product, Friesian bullock calves for intensive feeding systems, whereas dealers move calves suitable for a variety of feeding or storing systems. Moreover, it is in south and south-central Scotland where the Friesian bullock calves for intensive feeding are in greatest demand. Hence, as will be examined in more detail subsequently, the paradoxical situation has arisen whereby supplies for farmers in south Scotland are drawn, in large part, from north England whilst supplies for north Scotland come mainly from south England.

Against this background of the differences between the north and south England supply areas, each of the three types of transfer from the north itself will now be considered:

Dealers As in south England, dealers and/or their agents purchase most of their supplies at auction markets. Carlisle and Preston appear to be the most important centres, but numerous other markets contribute to the trade.

Marketing Groups The farmers' marketing groups specialize in Friesian bullock calves for intensive feeding. This emphasis on a standard product is beneficial not only in terms of distribution but also in terms of supply, that is, farmers who join the group know what is required and can endeavour to produce it. Moreover, standardization also makes it easier to determine a price acceptable to both buyers and sellers.

Farmers Direct transfer of calves from farmers in north England to farmers in Scotland is the least important of the three methods. These movements usually arise from contacts made through advertisements placed in farming journals such as the Scottish Farmer and the Farmer and Stockbreeder.

#### Breeds and Age of Calves and Sequence of Supply

A recent survey by D.A.F.S. indicated that over two-thirds of the English calves moved to Scotland were dairy breeds and the remainder were beef breeds, the designation as to whether beef or dairy being based on the breed of cow from which the calves were bred.<sup>10</sup> This sample applies only to the 15 per cent of the English calves which are fed directly (p.358), but, taken together with other information, it does indicate that the vast majority of the calves are

derived from dairy cows. Hereford x Friesian and pure-bred Friesian calves are the most important types but numerous other breeds and crosses are common.

Like their Scottish counterparts, dairy cows in England are bulled so as to produce calves and hence milk throughout the year, but births are concentrated in the spring and autumn for summer and winter milk production. Since most of the calves are moved when three to six weeks old, it is during these periods that supplies are at their highest. The spring peak is the most important one, it being normal for 40 per cent of the total movement to take place between late February and early May. Then, following a lull from May to July during which about 20 per cent are moved, supplies rise again throughout August, September and October. This period accounts for about 25 per cent of the total, leaving a balance of 15 per cent which are moved between November and the end of January.

#### B. DEMAND

Although it is not possible to measure precisely the trade in English calves prior to 1965 (pp.360-361), estimates have been made from time to time which give a rough guide to its recent development. From a few hundred per year in the early 1930's<sup>11</sup> the trade grew to 35,000 in 1953/54,<sup>12</sup> 60,000 in 1958/59<sup>13</sup> and, finally to an average annual rate of 86,000 between 1965/67.<sup>14</sup> The most important reasons for this rapid increase are:

- (1) The Calf Subsidy Scheme, begun in 1941, under which payment is made on calves suitable for rearing for beef production.
- (2) Since 1945 it has become common to use milk substitute alone or

in conjunction with liquid milk for the rearing of calves. Before this, cows were the sole source of milk for the calves, and hence the numbers which could be maintained were far fewer.

(3) Cattle are being fed more intensively than in the past, in particular it has become common to fatten them under barley beef and semi-intensive systems to finish at 15-18 months and 18-24 months respectively. Dairy calves, especially Friesian bullock calves, are particularly suited to the barley beef system. Moreover, possible competitors in the form of beef calves are not so popular because, unlike the Friesians and dairy breeds in general, they tend to lay on fat at too early an age when fed intensively. Then too, dairy crosses such as the Hereford x Friesians are close rivals to pure beef breeds for the semi-intensive system. The importance of this factor is obvious in view of the fact that Friesian and Hereford x Friesians form the bulk of the movement from England to Scotland and that, until recent years, few such calves or their equivalents were available from the dairy herd in Scotland.

(4) The tendency to finish cattle at younger ages means that the total number which can be fed during any given period has increased. This in turn has led to an increased demand for stores which is met in part by calves from England.

(5) The rapid expansion in the Scottish beef cow herd in recent years has led to a marked increase in the demand for calves to replace those which die, and part of this demand is met by imports from England.

#### Distribution within Scotland

Distribution from Markets As recently as twenty years ago at least half the English calves brought into Scotland were distributed to



farmers from auction markets. Now, however, only about 10 per cent are handled in this way (p.358). There are several closely related reasons for this change. Previously, almost all of the calves were transferred by rail and, although some were bought at the railway stations of destination by farmers themselves, it was more common for them to be given lairage at the markets which were conveniently located adjacent to the railways (p. 59), and afterwards to be sold by auction to farmers. Some were shipped by rail as recently as 1960 but now all of them are moved in lorry waggons. This method lends itself more readily to direct movement because the calves can be sent to the purchaser's farm without their journey being broken and made more strenuous by transfer from rail to road carriers. Indeed, it was quite common under the railway and market system for 10 per cent to 20 per cent of the calves to die and many of the survivors to be sold in very poor condition. Recent regulations against such practices have been an important factor in the change from railway to road transfer and it has been, and still is, mitigating against sale by market. Moreover, animal health authorities have advised against sale by market in an attempt to control the spread of livestock diseases, in particular foot and mouth disease, severe outbreaks of which occurred in 1966 and again in 1967. Direct rather than market transfers are more suitable in this regard not only because it is easier to trace the calves in the event of an outbreak, but also because there is less risk of it spreading because the calves are kept in small, separate groups during the entire transfer process. For all these reasons, then, the sale of English calves through the auction markets in Scotland has declined and will probably continue to do so.

The most important markets which still do handle a significant



number of English calves are Lanark, Stirling and Paisley in south-west Scotland, and Kittybrewster (Aberdeen) in the north-east. The three southern markets receive most of their supplies from two groups of dealers. One group, usually resident in England, comprises dairy cattle dealers who purchase cows and heifers in Scotland and distribute them in England. As a sideline, they purchase dairy calves in the districts of England to which the cows are distributed and bring them up to Scotland on their next cow-purchasing trip. The second group is composed of Scottish and English dealers who sell calves for rearing at these markets and buy sink calves for sale in England (p.360). In this manner, then, the dealers make efficient use of their trips in both directions. Unlike the southern markets, Kittybrewster is supplied by local dealers. Most of them, however, make regular trips southwards to buy calves in England and also at Lanark, Paisley and Stirling. In addition, they commonly have agents resident in England, particularly in south-west England, who purchase and ship calves for them (p.361).

Direct Transfers Dealers, marketing groups and farmers all supply calves directly to farmers in Scotland. Supplies to the North-East Region, which form over half of the total imports (Table 69), are handled mainly by dealers. Dealers are probably the most important type of supplier in the South-East, South-West and East-Central Regions as well, but marketing groups in particular are of considerable importance. The main reason for this difference is:

- (a) the marketing groups are better able to assess the needs of farmers in south Scotland for reasons previously mentioned (p.362),
- (b) in any case, most of the groups supply Friesian calves for the barley beef system and most of these go to farms in the intensive arable

area from the Lothians to Strathmore.

Except for a small proportion, probably accounting for not more than 10 per cent of total imports, which are bought as replacements for lost calves in single suckled herds, all the English calves are multiple reared either by multiple suckling or bucket feeding, with or without milk substitute, or on milk substitute alone. The cows used for multiple suckling are usually dual purpose or dairy breeds and the cow's own calf plus two or three purchased calves are suckled for 8 - 12 weeks at the beginning of the lactation period. These are taken off to be followed by three others for two to three months, then by two and then by one so that during the entire lactation period ten calves can be reared. The bucket feeding system, under which the calves are kept for 8 - 12 weeks on liquid milk and then put on to milk substitute, is most common where multiple rearing is associated with beef cows and, hence, liquid milk for calves is less. Milk substitute alone is a relatively recent method of multiple rearing and is probably now just as important, if not more so, than the other systems. Multiple rearing by whichever method is, of course, an intensive system and hence is not usually associated with hill and upland farms; nor is it common on dairy farms because, as will be discussed more fully in the following section, dairy farmers produce most of their own calves for rearing for beef. This means that the vast majority of English calves are reared in the eastern parts of Scotland on Rearing with Arable, Rearing with Intensive Livestock, Arable Rearing and Feeding and Cropping Farms (Table 65 and Map 4).

The concentration of over half the total in the North-East Region (Aberdeen, Banff, Moray and Nairn and Kincardine) is understandable if the ultimate use of the calves is examined. Only about 15 per cent

of the English calves are fed on the farms to which they are distributed and the other 75 per cent (allowing 10 per cent for beef herd replacements) are sold again as stores (p.368). The former form the bulk supplies sent to the cropping and the more intensive arable and feeding farms whilst the latter, i.e. the vast majority, go to rearing farms of various types. And, it is the concentration of these rearing farms in the North-East Region which accounts for its taking so high a proportion of the English calves.

#### MOVEMENT OF SCOTTISH DAIRY CALVES

##### NUMBERS AND TYPES

An estimated total of 318,000 calves were produced by the Scottish dairy cow herd during 1966 (Map 57). Of these, 108,000 were used as replacements and another 78,000 were sold slink, leaving 133,000 for beef production, 92,000 of which were moved from the farm on which they were bred to other farms for rearing (Table 69). It is known that a large proportion of the 92,000 were sold at auction markets but it was not possible to determine it with any degree of accuracy because most of them were not distinguished in the auction records from calves which were reared for eventual use as replacements for the dairy herd or from slink calves. It was possible, however, to estimate the approximate numbers used for each purpose on a regional basis and to assess the inter-regional movement of those for feeding (Table 67).

The most striking feature at the regional level concerning the use to which the calves were put is that higher proportions were kept for dairy herd replacements and sold slink in the South-West Region than elsewhere in Scotland. The explanation of these differences

involves a consideration of three factors:

- (1) the distribution of dairy cows by breed;
- (2) sources of dairy herd replacements;
- (3) association of dairying with other types of farming.

Regarding breed structure, it is known that, with some exceptions, the higher the percentage of Ayrshire cows the higher the proportion of calves sold sink.<sup>15</sup> Conversely, the higher the percentage of Friesians, the higher the percentage of calves available for feeding. And since it is the South-West Region which has the highest proportion of Ayrshires (Map 55) it is not surprising that this is where the highest proportion of the calves are sold sink. A further reduction in the number of calves for feeding in the South-West Region occurs because this region supplies almost all of its own dairy herd replacements and also a proportion of those for the other Scottish regions. In addition, a large number are exported to England.<sup>16</sup> Indeed, the potential number of calves born in the South-West Region is probably reduced by over 10,000 by the movement of in-calf dairy heifers and cows to England. Finally, the association of dairying with beef cattle breeding and rearing leads to a higher percentage of dairy cows being crossed with beef bulls in regions outwith the South-West. This, of course, is one of the main reasons why a proportion of dairy replacements in these regions is purchased in the South-West.

In spite of the high proportion of the dairy calves used as replacements or sold sink in the South-West Region, the concentration of dairy cows there still leaves it with 75,000 of the 133,000 of the dairy calves for beef production. However, 15,000 of these are moved to other regions, chiefly from Lanark, Paisley and Stirling markets

(Map 53) so that only about 60,000 were reared in the South-West Region itself (Tables 67 and 69). Elsewhere the only inter-regional movement was a transfer of 3,700 from the Highlands to the North-East. Hence, a total of 18,700 were moved between regions and 114,300 were reared on the farms where they were bred or were moved between farms intra-regionally.

It has been previously mentioned that the majority of the calves would have been kept for later resale as stores rather than for direct feeding. It would be expected, then, that the calves would have been distributed to semi-arable and marginal areas rather than to intensive cropping and feeding areas. Unfortunately, it was not possible to gather enough information to illustrate this point for Scotland as a whole. However, an indication of it is given by a comparison of the distribution patterns within Aberdeenshire of dairy calves and Irish store cattle (Maps 56 and 70). The Irish stores, which are known to be for immediate fattening, are bought by farmers in the intensive arable areas of eastern Aberdeenshire. In contrast, most of the dairy calves are distributed to semi-arable farms in the more inland and/or upland areas from which, by implication, most of them would be sold later as older stores.

#### MOVEMENT OF SCOTTISH BEEF CALVES

During 1966, 110,000 home-bred beef calves were moved from Scottish farms to other farms in Scotland and in England and Wales. Of these, about 10,000 were beef calves of a few weeks to a few months old and 100,000 were suckled calves aged 7 to 12 months. Some 101,000 suckled calves were, in fact, marketed but about 10,000 of these were



sold by dealers who had bought them at other markets in Scotland thus leaving an estimated total of 9,000 which were moved outwith the auction market system (Table 70). Most of the younger beef calves, too, were sold through auction markets; precisely how many it is difficult to determine because they are often indistinguishable from young dairy or dairy cross calves in the auction records.

#### YOUNG BEEF CALVES

The overwhelming majority of the 10,000 beef calves moved at a few weeks to a few months old come from crofts in the north-west Highlands. Most of them are Shorthorn or Aberdeen Angus calves out of Shorthorn and Shorthorn x Highland cows, the Shorthorns being either beef or dairy types. There are many reasons why some crofters prefer to sell the calves very young rather than by the more usual method as suckled calves, the most important of which are:

- (1) by selling the calves young, the cows' milk can be used for domestic purposes;
- (2) the calves are born late in the spring (March to May) and they would not receive high prices in the autumn, at which time they would be competing with more mature calves;
- (3) transport costs to markets in the east Highlands are less for the lighter-weight young calves.

For these reasons, therefore, some crofters elect to sell their calves in the late spring at £8-£10 per head rather than wait until the autumn when they often fetch no more than £15-£25, with an increased transport charge to take into account.

The main market for the young calves is Dingwall, but a considerable number are sold at Inverness. Most of them are bought by



dealers for resale at markets in Aberdeenshire, of which Kittybrewster is the most important.

#### SUCKLED CALVES

##### Numbers Moved

Suckled calf sales have been held in Scotland for many years but since 1945 the numbers have increased many fold. This is mainly due to the expansion of the beef breeding herd (p.342), but it is also due to the trend towards more rapid fattening with the consequence that fewer of the calves are kept to sell as older stores. This latter trend has affected the western Highlands and Islands particularly because it was here that the former system of keeping on calves to the six-quarter stage, i.e. about 18 months old, and to the two to three year old stage was most firmly entrenched, at least in the recent past.

It should be noted, however, that not all the calves bred from beef cows are sold at the suckled calf stage. Of the estimated total of 299,000 born in 1966, 60,000 were used as replacements for the breeding herd, another 69,000 were fed on the farms where they were bred and 60,000 were kept for sale as stores at over one year old. Thus, if only the calves for feeding are considered, the 100,000 moved as suckled calves represent about 2/5ths of the total bred (p.358 and Table 69).

##### Movement to Markets

Viewed as a whole, the marketing pattern of suckled calves bears quite a close resemblance to the distribution of beef cows (Maps 50 and 58). The throughput of markets in the east and south of the country is increased, however, by the movement of calves from the

north-west Highlands through to Inverness and Dingwall (Map 59) and from the Western Isles to Oban (Table 71), features which have already been discussed in connection with the movement of store sheep (pp. 222-224). Other than these markets, most centres are supplied by local farmers, Perth being an example of a market with a large local hinterland (Map 60).

There are qualifications which must be made to this last statement, however. Markets in the North-East Region, particularly those in the lowland parts of Aberdeen, and also Dingwall and Lanark receive a considerable proportion of their supplies from dealers who purchase them outwith the local supply area (Table 72). At this point it is sufficient to note that this type of movement to markets exists; a full explanation of it will be given in the following section.

#### Demand

Demand in itself does not fully explain the patterns of distribution and lines of movement; other factors, such as lines of communication and distribution of supplies and markets with respect to demand, must also be taken into account. Nevertheless, an understanding of the various aspects of demand, not least the regional variations in them, are basic "background" information, as it were, for the analysis of movement which is given in the following section.

The demand for suckled calves depends upon many interrelated factors, the most important of which are:

- (1) farm types and farm sizes;
- (2) the type(s) of calves required, including their size, weight, breed and condition;
- (3) the use to which the calves are put, i.e. fattened or sold again as older stores.

### Use of Calves, Farm Types and Farm Sizes

Farmers who purchase suckled calves can either fatten them, with or without a store period, or sell them as older stores to other farmers. The use to which each of the 101,000 calves was put could not be determined, but from the information which was available it was readily apparent that important regional differences did exist.

Fattening of purchased suckled calves, usually without a store period, is most common in the intensive arable districts of Scotland, viz. the Lothian coastal plain, Strathmore and east Fife, coastal Aberdeenshire, the Moray Firth and the Easter Ross - Black Isle area. Farmers in the semi-intensive arable areas, viz. central Ayrshire, lowland Galloway and Dumfries, the Merse of Berwick and central Aberdeenshire also fatten a considerable number, but more in proportion are resold as stores. Inland and up-slope from these two areas, rearing of calves for resale predominates over feeding, the most extensive area of this type being located in Aberdeenshire.

Within this general pattern, however, variations can arise because of the presence or absence of other forms of stock. For example, sheep are more important than cattle in the lowland districts of Berwick and Roxburgh and this tends to reduce the demand for suckled calves. Similarly, the concentration of dairy cattle in the South-West Region reduces the number of suckled calves which are maintained there. Conversely, the emphasis on beef cattle rearing and feeding in Aberdeenshire increases the demand for suckled calves relative to other districts.

Size of farm, too, must be taken into account. On similar types of arable land it is often the case that the emphasis on the smaller farms is on storing whilst the larger farms concentrate on fattening.

The main reason for this difference is that the individual care and attention, which is required to a greater degree in the rearing and storing stages than in the fattening stage, is provided at less expense by the farmer and his family on a small arable farm than on a larger arable farm where labour would have to be employed for this purpose. Then, too, smaller farms are, on average, more intensively stocked than larger ones. An indication of this is given by the ratios of beef cows to cattle over 12 months old by farm type and size (Table 65). The ratio is consistently lower on the smaller and medium-sized rearing and arable farm types than on the larger ones. Of course, cattle over 12 months old in June include much more than suckled calves purchased the previous autumn. But these figures, together with other indicators, suggest that purchases of calves per unit area is higher in areas of small and medium-sized farms than it is in areas of larger farms, even though the farms are on similar types of land. Indeed, as will be more fully discussed later, the concentration of small farms in Aberdeenshire (Table 65) is an important factor contributing to the large number of suckled calves distributed within that county.

#### Types of Calves

The type and size of farm gives a good indication of the use to which suckled calves will be put and hence of the demand for the types of calves best suited for this purpose. The intensive arable farmer who intends to put the calves directly on to a fattening diet will want mature calves of 4 to 5 cwt. On the other hand, the semi-intensive or marginal farmer who intends to sell them again as stores in the spring will favour less mature calves of 3 to 4 cwt. This in turn

leads to differences in the types of farms from which the calves come. Calves from lowland and semi-upland farms are usually earlier born and heavier than calves from upland and hill farms so that the former tend to be bought for direct feeding by farmers in the intensive arable areas whilst the latter tend to be bought for resale as stores by farmers on semi-arable and upland farms.

Weight and age alone are not the only factors the buyer takes into consideration. Condition at the time of sale is important and it is not uncommon for a farmer to purchase a lighter weight animal for fattening if he thinks it will thrive better than a larger one. In addition, the expected final weight and time taken to reach it also must be estimated at the time of purchase. In this regard, sex is of considerable importance for, as a general rule, heifer calves mature more quickly and at lighter weights than bullock calves of the same breed. Breed itself is a major factor, too, the rates of maturity for the most important breeds, from fastest to slowest, being: Hereford, Aberdeen Angus, Beef Shorthorn, Galloway and Highland. Mature weights are more difficult to estimate, but it is commonly recognised that Angus and Angus crosses tend to mature at lighter weights than the other breeds.

In summary, the following points can be made:

- (1) Farmers in the intensive arable areas, particularly those with large farms, tend to purchase suckled calves for fattening in courts during the winter or off grass during the following summer. For this purpose Angus and Hereford crosses out of Blue Grey or Shorthorn cows and  $4\frac{1}{2}$  to  $5\frac{1}{2}$  cwts. at the time of purchase, are the most desirable types.
- (2) Farmers in less intensive arable areas and those with smaller farms on intensive arable land also fatten a considerable number of the suckled



calves they purchase, but a large proportion are sold again as stores. For fattening, Hereford and Angus cross calves, born in February and March and sold at 4 to 5 cwts, and Blue Greys are the types in greatest demand. The stronger and more forward of these will be fattened during the winter or summer as in (1) but a considerably higher percentage are not fattened until the following winter or spring. Those for storing and resale tend to be calves born in March and April and only  $3\frac{1}{2}$  to 4 cwts at the time of sale. Angus and Hereford crosses out of Shorthorn x Highland cows, Blue Greys, Shorthorn x Highland and pure-bred Galloway and Highland calves all commonly are used for this purpose rather than for direct fattening.

(3) On even less intensive arable farms and on semi-upland rearing farms almost all the calves purchased are for resale as stores, the breeds and types being essentially the same as those for storing on farms in (2) above.

(4) Very few suckled calves are purchased by farmers on the uplands proper because the accommodation and feed available are required for beef cows and sheep. Moreover, if surplus feed and accommodation are available they are normally used for maintaining the smaller home-bred suckled calves over the winter for sale as yearlings during the spring.

#### Movement from Markets to Farms

An estimated total of 101,000 suckled calves were sold at 75 markets throughout Scotland during the months of September to December 1966. Fifty-two markets, handling 89.7 per cent of the total number which were sold, provided complete information as to the types of buyers, i.e. farmers, dealers, and the location of their residences (Maps 61, 62 and Table 68). Moreover, in no region did the recorded



movements fall below 75 per cent of the estimated total for that region.

Considering the total movement of suckled calves, the outstanding feature is that over 2/5th of the 87,000 distributed within Scotland went to farms in Banff, Moray, Nairn, Aberdeen and Kincardine (Tables 73 and 74 and Maps 61 and 62). Farmers in these counties, besides purchasing almost all of the suckled calves marketed locally, bought 9,600 in the Highland Region, 1,800 in Orkney and Caithness and 1,600 in the East-Central, South-West and South-East Regions. In addition, "Aberdeenshire"<sup>17</sup> dealers brought in another 10,000 from markets throughout Scotland (Map 58). Outwith the North-East Region movements were predominately of a local nature although this sometimes involved inter-regional transfers, e.g. from Stirling and Lanark in the South-West Region to the Lothians and the East-Central Region and from St. Boswells, Hawick and Newcastleton to Lanark, Galloway and Dumfries (Table 74 and Maps 61 and 62). Of the limited number of longer distance movements, only those from Oban and Dalmally to the East-Central, South-West and South-East were of any particular importance (Table 74).

All these movements, including those to England and Wales, can be looked upon in numerical terms as the adjustment of total demand to total supply. Thus, in the Aberdeenshire-Moray Firth area, demand is far in excess of local supplies and hence calves are brought in by dealers and farmers from areas of surplus. In contrast, supplies are greatly in excess of demand in the Highland Region and in Orkney and Caithness and therefore there is a large outward movement. Similarly, but on a much reduced scale and often involving the incidental crossing of regional boundaries within the natural hinterlands of markets, supplies and demand are balanced in the other regions.

When the movements are examined in more detail, however, a simple numerical analysis of supply and demand is not satisfactory. Hence a more detailed picture is given below, beginning with a region by region analysis of the movement within Scotland. This is then followed by a brief examination of the movement to England.

#### North-East Region (excluding Orkney and Caithness)

The north Highlands and Orkney and Caithness have been the chief source of "imported" store cattle for farmers in the North-East for over 100 years. This was a natural development in terms of supply and demand, lines of communication and relative locations. Little is known about the volume of the trade in earlier years, but in 1929/30, 31,000 stores of all types were moved.<sup>18</sup> Most of these were yearlings and older stores and it was not until more recent years, owing to the elimination or curtailment of the store period and the expansion of the beef breeding herd, that the movement of suckled calves was developed on a large scale. Even the large number from this area was not able to satisfy the requirements of farmers in the North-East Region, however, and by the 1950s supplies of calves were being brought from southern markets, such as Oban, Lanark, St. Boswells and Hawick. Thus, with the addition of these new sources of supply, the hinterland of the North-East Region extended over the whole of Scotland. Indeed, in recent years, even the North of England has come within its regular supply area for suckled calves.

The fact that farmers in north Scotland have been suppliers of stores to the North-East Region for many years has had important repercussions on the breeding policy in the northern area. Thus, although other factors such as type of land and availability of

replacements are important, it can be said that the almost ubiquitous use of Aberdeen Angus bulls in the north is a direct result of the demand for "black", i.e. Angus or Angus cross calves in the North-East Region. This influence is well known in general terms and, moreover, evidence testifying to it is given by recent changes in breeding policy in an area which has only recently become part of normal hinterland of buyers from the North East. As has been pointed out in West Highland Survey,<sup>19</sup> it was not until the north-west Highlands and Islands became regular suppliers of calves to the North-East that Aberdeen Angus bulls were used on an extensive scale. Previously, Highland and Shorthorn bulls and cows were the main types and most of the progeny were sold as older stores at Oban and other south Highland markets, from whence they were moved to south Scotland and to England. However, from the 1930s onwards farmers and dealers from the North-East Region began purchasing calves in the area and soon Aberdeen Angus bulls were being used. In the long term this proved detrimental to the breeding stocks because Angus cross females, many of which were retained for breeding, were not suitable to the area. These longer term drawbacks were overlooked at the time, not only by the farmers and crofters, but also by the D.A.F.S., the latter even contributing to the change by supplying Aberdeen Angus bulls. Hence:-

Railway lines and routes of steamer services have been more important than geology or soil in dictating breeding trends ..... Dingwall and Inverness are good markets for black polled cattle and bad ones for Highlanders and their crosses, because the cattle go to the east side of Scotland where the black poll is preferred. Oban is a strong buyer of the Shorthorn-Highland crosses and not of the black polls because the cattle go south from there to feeders who do not favour the black polls.<sup>20</sup>

Although not so well documented, it is apparent that farmers and crofters in the area from Inverness north to Orkney and Zetland had pursued a similar breeding policy earlier for the same reason. Moreover, although in recent years the deterioration of cow stocks

occasioned by the policy of retaining Angus cross calves as breeding replacements has been rectified to some extent by the increasing use of Shorthorn and Highland bulls in the north-west Highlands and Islands, it is still true today that there is a marked difference between breeding policies in the area from the Uists southwards, which supplies Oban, and the area north of the Uists (including Skye), which supplies Inverness and Dingwall and hence the North-East Region (Table 75).

In south Scotland, purchasers from the North-East Region do not take a large enough proportion of the calves to influence breeding policy directly. Even in this area, however, purchasers from the North-East Region show a definite tendency to favour Angus crosses over other breeds available. That this is so is well illustrated by the sample sales shown in Tables 76 and 77. Furthermore, there is also a higher demand than elsewhere in the North-East Region for fast maturing but smaller types, as is shown by the preference for heifer calves.

This bias in favour of Aberdeen Angus calves throughout the North-East has grown out of this being the home of cattle of that breed. Indeed, to some farmers it was a profound and even shocking change when supplies of Aberdeen Angus cattle first fell below demand and large numbers of "coloured" cattle, i.e. all cattle other than black, for example dairy and dairy crosses, Hereford crosses etc., began to be imported. This bias has continued nevertheless, and, particularly along the Moray Firth and in the Buchan area of Aberdeen, black polls are still greatly in favour. The popularity of Aberdeen Angus cattle, or rather crosses based on them, is not simply explained in terms of favouritism for the local breed, however, for, above all others, cattle



of this type have proved to be profitable in the North-East Region.

The reasons for this are many, including:

- (1) Aberdeen Angus cattle have gained a deserved reputation for high quality in U.K. markets, particularly in the London market, and, arising out of this, marketing organisations such as the Buchan Meat Producers have been formed to distribute them. And, although it is a well known fact that other breeds of cattle fed in the North-East are often "passed off" as Aberdeen Angus by being sold as "Aberdeenshire-fed beef", the genuine product is still guaranteed as such by the more reputable marketing groups. This, in turn, perpetuates the production of Aberdeen Angus cattle with a consequent demand for black calves.
- (2) The Aberdeen Angus strain in the crosses imparts to them qualities which are especially suited to farms in the North-East. As a general rule, farmers in this area prefer small cattle, particularly if they are to be tied up in byres for feeding and for this purpose the smaller Angus types are supreme, particularly the heifers which finish more rapidly than the bullocks.
- (3) Until recent years, the "black" versus "coloured" cattle distinction was a real one, the "black" cattle being Angus and Angus crosses and the "coloured" usually being tainted with dairy breeds. In other words, the colour distinction was a convenient one to distinguish between the quality of the beef which the stores would produce when fattened. In recent years, the distinction is not necessarily valid because, for example, many Hereford crosses produce beef of the highest quality. In this regard, it is noteworthy that black polled calves are not always what they appear to be, i.e. Aberdeen Angus calves. For example, any breed of cow crossed with an Angus bull produces a first generation of black calves, even though only half of the blood strain is Angus. A

more striking example is that an Angus cross cow mated with any breed of bull other than an Angus will produce calves, half of which are black and half of which are polled although the two do not necessarily coincide. Thus, a black calf which had only one quarter ( $\frac{1}{4}$ ) Angus blood in it could be sold ostensibly as an Aberdeen Angus. The implication of this colour marking is that breeders can easily produce black calves and further contribute to the continuance of the supply and hence demand for them. Of course, if the black calves are of poor quality the demand for them will drop, but since there are many other good beef stocks in Scotland now this does not often occur, and hence the purchasers often wrongly attribute the quality to Aberdeen Angus blood.

It should be noted at this point that, important as the preference for Angus calves in the North-East Region is, other breeds and types are becoming of increasing significance. Indeed, even between the beginning (1966) and the end (1970) of this study there were important changes, in particular, there was a marked increase in the popularity of Hereford crosses. This does not mean to say that fewer Angus calves are born than formerly; indeed owing to the recent increase in calves produced, the number in the North-East is probably greater than ever before. But it does mean that proportionately, a far greater number of Hereford bulls is being used, and there is a consequent increase in Hereford cross calves. The reasons for this are many, one of them being that until recently farmers in north-east Scotland were not familiar with the Hereford breed. This ignorance, however, has been overcome to a large degree in recent years by (a) the increasing number of English dairy calves, a large proportion of which are Hereford crosses, which are being brought into the North-East (p.365), (b) Hereford



crosses are well established in south Scotland (p347) and, since a considerable number of these calves go to the North-East, this also has made farmers there more familiar with the Hereford breed (Table 77), (c) the Hereford breed has been popularised, not only in the North-East but throughout Scotland by the North British Hereford Breeders Association which was formed in 1950. These factors in themselves do not fully explain the breed's popularity but, taken together with its feeding ability, in particular its ability to forage and make better gains on weight for age than Angus crosses, they are largely responsible for its growing popularity even in this Angus stronghold.

Such a fluid situation posed difficulties over the choice of which year to base the discussion of breed preference, breeding policies, etc. The logical choice and, in fact, the one used was the year 1966 because that was the year for which statistical data on movement was collected and most of the interviews were conducted. This then, should be borne in mind when reading the following sections on movement.

The preceding discussion has been concerned with some aspects of the demand for suckled calves by farmers in the North-East Region but fully to understand the patterns of movement, the purposes to which the calves are put and the source of supplies for each purpose must be examined. Most of the supplies of suckled calves of a type suitable for direct feeding come from the north east and north of Scotland. A proportion of the calves to store and fatten or to sell again as older stores is met in these areas, too, but the demand exceeds the supply and therefore farmers and particularly dealers purchase them at southern markets such as Oban, Lanark, Hawick and St. Boswells. Some of these calves too are fed directly, but the vast majority are later-born, less forward and/or poor quality calves for storing and resale or for

storing and feeding the following summer or winter.

#### East-Central, South-East and South-West Regions

Until recent years beef stores from Galloway, the west Highlands and Islands and north-east England and dairy stores from south-west Scotland were the main types of cattle fed by farmers in the East-Central, South-East and South-West Regions. This variety of types reflected not only the lack of uniform supplies but also the emphasis on cropping, sheep and dairying in these areas. That is, cattle were kept primarily as a sideline to produce dung, to keep the grass in check for sheep or to supplement the income from dairying rather than for high-quality beef production, as was the case in the North-East Region. This general situation obtained until the 1930s at which time high prices for store relative to fat cattle led a number of farmers in these regions to establish beef breeding herds and hence to supply a large number of their own stores for feeding. This was not only desirable but possible because improved grasses and artificial fertilizers allowed stocking rates to be greatly increased.<sup>21</sup> Moreover, particularly in the South-East Region, increased sheep stocking rates proved to be unsatisfactory because they led to diseases, such as stomach worms, and hence beef stocks were adopted as an alternative.<sup>22</sup> This trend was temporarily checked during the Second World War, but was soon revived and intensified after it largely because various subsidies were introduced (p. 342).

This recent expansion of the beef cow herds has had important implications with regard to the present-day movements of suckled calves and older store cattle. First, it provided arable farmers in Strathmore, Fife and the Lothians with forward suckled calves for court

feeding. This has greatly decreased the demand for Irish stores because the calves, although not as suitable for dung production, provide fat cattle of good quality which, moreover, often leave greater profits than Irish stores. Then, too, artificial manures and new methods of harvesting have decreased the need and wherewithal for dung production.<sup>23</sup> Second, it provided stores for wintering and/or summering on semi-upland or upland farms. Third, partially because of local conditions of soil and climate and partially because farmers in the south have long been accustomed to a variety of stores, no one breed or cross has become as predominant as the Angus in north Scotland. Thus Galloways, Blue Greys, Hereford cross, Angus cross and even various beef cross dairy calves are produced in significant numbers.

Given that there is a greater catholicity regarding beef preferences in south Scotland, there are still as strong preferences, if not for breed, at least for particular types of suckled calves in terms of size, weight, condition and sex. The majority of calves going to farms in the intensive arable areas (Fife, Strathmore, the Lothians and the Merse of Berwick) are forward calves born in December to February and sold in September or October at 5 cwts. The marketed supply of these "top" or "forward" calves is limited, however, because they come only from lowland or semi-upland breeding herds which are relatively few in number (Table 64), and also because a high proportion are retained for feeding on the farms where they are bred. That said, a significant number of lowland and semi-upland farmers undertake the production of such calves specifically for the purpose of selling them to feeders.<sup>24</sup> A proportion of the calves at most of the markets is of this type, but they are particularly numerous at those

in the arable and semi-arable producing areas. The distribution of cows qualifying for the Beef Cow Subsidy is a rough guide to which markets are the most important ones (Maps 53 and 64). Thus, large numbers are sold at Kirriemuir and Perth in the East-Central Region and St. Boswells, Reston and, to a lesser extent, Hawick in the South-East Region, but, on the other hand, few are marketed in the South-West Region. These markets for forward calves are all within easy reach of farmers in the intensive feeding areas and, owing to competition for scarce supplies, it is uncommon for all the farmers in a particular area to have their requirements met at purely local markets. Thus, feeders in Strathmore and Fife, although they can obtain a large number of suitable calves at Perth, Kirriemuir and Milnathort, also purchase them at St. Boswells, Reston and Stirling. Similarly, farmers on the Lothian Coastal Plain and the Merse of Berwick receive supplies from St. Boswells, Hawick, Reston, Lanark and also from north England markets and purchases in the North-East Region by farmers in Perth, Fife and Angus are mainly of these forward suckled calves for direct feeding. Thus, the apparently anomalous situation arises whereby suckled calves from south Scotland go to the North-East Region and suckled calves from the North-East are moved to south Scotland is explained; the former are mainly for storing and the latter are mainly for direct feeding (Table 74).

Calves for direct feeding are also moved locally within other parts of the south, such as in the Ayrshire coastal belt, the Rhinns and Machars of Wigtownshire and in lower Kirkcudbright and Dumfries. But in these areas and also in the less intensive arable and semi-arable areas of the East-Central and South-East Regions, direct feeding is over-shadowed by storing and later feeding and by storing for re-sale.

Supplies for these latter two purposes are purchased at local markets throughout the southern regions and also from the south-west Highland markets of Oban and Dalmally (Table 74). A common practice, particularly on the uplands and semi-uplands of Berwick and Roxburgh, is for farmers to sell suckled calves of their own breeding, most of which are in a forward condition but which are not fattened "at home" because of lack of suitable feed and/or because of the high prices received for them and to replace them with "rougher" or less forward calves for storing and re-sale. It is mainly because of this pattern of sales and purchases that the calves moved to the South-East from Oban market are predominantly of the Shorthorn, Galloway and Highland cross types, since these types of calves are generally in less forward condition than the Hereford and Aberdeen Angus crosses (Table 76).

It is a well known fact that a larger proportion of the Galloways and Blue Greys than the Hereford and Angus crosses sold at markets within the South-West Region are bought by farmers within the region. It should be noted here also that a considerable but unknown number of the Blue Greys and Galloways bought by farmers in the South-West consist, in fact, of heifer calves for eventual use as breeding replacements (p. 350). These and a large percentage of the Blue Grey and Galloway bullock calves are stored for a period, then re-sold. In contrast, a large proportion of the calves going out of the area are for feeding.

#### Highlands and North of Scotland

Very few marketed calves stay within the Highland Region or Orkney and Caithness. Rather, the vast majority are moved to the other Scottish regions and to England (Tables 70 and 73). Moreover, most of those that are bought by local farmers or crofters are small, later-



born calves of the slower maturing type, i.e. Highlanders, and Galloways and their first crosses with beef or dairy Shorthorns, for re-sale as stores the following spring or autumn or even as 2-3 year olds one and a half to two and a half years after their purchase as calves. In a similar manner to Galloway, considerable numbers of them, particularly the Blue Greys and cross Highlanders, are retained for later sale as breeding replacements. The most notable exception to this pattern is that a large number of forward calves is purchased and fed in the Easter Ross-Black Isle area. Also, some crosses, in particular Angus and Hereford, are bought and fed on Tiree, Lismore and Iona and in south Argyll (Kintyre).

#### Dealers and Farmers

As with the movement of store sheep, dealers are important suppliers of suckled calves only in those areas where local demand greatly exceeds local supply. Hence the North-East is the region receiving the highest proportion of its supplies from dealers. And, since north Scotland is the main supply area for the North-East Region, that is where dealers' purchases are highest in proportion to the total sold (Table 72 and Maps 58, 61 and 62). Most of the Scottish dealers' purchases in south Scotland, too, are by "Aberdeenshire" dealers, but English dealers also buy a considerable number there. These are the main movements effected by dealers but "other Scottish dealers" are locally important, as in the movement of calves from Oban to the South-East and from Ayr, Newton Stewart, Castle Douglas and Lockerbie to farmers in the vicinity of Lanark and Paisley. Finally, dealers purchase a considerable number at markets in the East-Central and North-East Regions. No definite patterns or lines of movement

could be discerned for these; rather, they appear to be local movements of a speculative basis, and it is not uncommon for these dealers to remarket the calves at the same centres where they purchased them.

#### Movement to England

During 1966, an estimated 13,087 suckled calves were moved to England and Wales from markets in Scotland (Tables 78 and 79 and Map 58). In addition, some calves would have been sold by Scottish farmers at centres in north England, the most important of which were Carlisle and Berwick. Both these southward movements were offset to some extent by marketings of suckled calves by English farmers at Scottish Border markets and by purchases by Scottish Farmers and dealers of suckled calves at north England markets. These northward movements and also the sale of calves at markets in England by farmers from Scotland were not traced in detail, however, and hence the following discussion is confined solely to the movements to England from Scottish markets.

Of the calves moved to England, 11,356 or 88 per cent were purchased at markets in the southern Scottish regions and most of these were from St. Boswells, Hawick, Newcastleton, Reston, Ayr, Newton Stewart, Castle Douglas, Lockerbie and, presumably, Dumfries, Annan and Thornhill (Table 79 and Map 58). The importance of these centres is to be expected because of their being the closest Scottish sources of supply for English buyers, many of whom also buy at north of England markets as well.

The only other important centres in terms of numbers moved to England are Perth, Lanark, Stirling and Oban. Although some distance from the Border, these markets hold large enough sales to attract English buyers; they are, as it were, "the second tier" of Scottish

suckled calf centres supplying England. It is, however, somewhat surprising that 938 calves from Oban, or about one third of the total marketed there, should have been moved to England, especially since only three markets - Hawick, Newcastleton and Lockerbie - exceeded it proportionately and only four - Hawick, Reston, St. Boswells and Newcastleton - numerically (Table 79 and Map 58).

To understand the importance of Oban as a centre for the English trade, several factors have to be taken into account. One is that, although the calves at Oban are mainly later-born, smaller and of less fast maturing breeds than supplies from south Scotland and north England, they gain weight surprisingly rapidly when they are moved to good land in England. The benefits accruing from the movement from harsher to kindlier conditions are much the same as for sheep handled in a similar manner, i.e. they shift or thrive well (p.269). Another factor of importance is that there is a scarcity of good quality suckled calves in mid and south England and, arising from this, buyers from there are more likely to purchase smaller and poorer quality calves than are their Scottish counterparts. Calves of this type, weighing only 3 - 3½ cwt., as compared with the normal calves of 4 - 5 cwt., and fetching £15 to £25 as compared with the normal average of £35 to £50, are sold in considerably higher numbers at Oban than at other centres in south Scotland and hence this, too, attracts English buyers. It should be noted, however, that few English farmers come north to buy these calves. Rather, dealers take them to mid and south England (Tables 78 and 79) where they are sold at a considerable profit to farmers who, being accustomed to dairy and dairy-cross calves, are willing to pay good prices for even these poorer quality Scottish calves. In contrast, as one dealer commented, "A Scottish farmer would

be ashamed to have these calves on his farm".

There is one other movement to England which, although not important numerically, is of considerable importance to the sellers and buyers concerned. For many years, English farmers have purchased a small number of the best quality calves at Speyside markets. Most of these calves are the products of Aberdeen Angus bulls and cross Angus cows (p.346), sell for up to £90 each and are used as "show" animals rather than for normal commercial purposes. Ballindalloch, Tomintoul and Dufftown often supply this type of beast, but during 1966 Grantown-on-Spey, where a total of 14 were bought, was the only centre involved (Table 74). It is interesting to note, too, that these were all bought by English farmers. Indeed, very few calves were bought by dealers, English or Scottish, at the Speyside markets. This situation arises because the high quality of the calves attracts farmers from afar and raises prices both of which deter dealers, the former because it obviates their normal function of matching supplies to demands over an extensive area, the latter because remarketing would probably result in loss of condition and hence loss of any possible profit (Table 74 and Map 58).

A final point regarding the movement of suckled calves to England is that Hereford crosses are the type in greatest demand south of the Border. For example, whereas 38 per cent of the Aberdeen Angus crosses and 22 per cent of the Blue Greys and Galloways from Hawick were distributed to England, 49 per cent of the Hereford crosses went there. Similarly, at St. Boswells 22 per cent of the Angus crosses were distributed to England as compared with 39 per cent of other breeds, most of which were Hereford crosses. Moreover, although a detailed breakdown was not available for the other markets, it is well known that

much the same pattern holds true for them as well. This preference for Hereford crosses is similar in kind to the preference for Angus crosses in north-east Scotland and arises for similar reasons, viz. that the Hereford and its crosses have long been popular in north England, particularly in Northumberland to which a large number of the calves go. And, in a similar manner as the Angus produces black calves (pp. 383-384), the Hereford bull "colour" marks its offspring from whatever breed of cow with a white face or at least a white "flash" on the forehead. Thus, calves out of Hereford bulls are easily recognizable as such and this, together with their proven feeding abilities under north England conditions, gives rise to the high demand for them. Furthermore, Hexham is one of the best known centres in Great Britain for Hereford store cattle and thus a farmer who purchases Hereford calves for re-sale as stores is assured of a ready market and good prices for them. Conversely, Angus crosses and Blue Greys and Galloways are not so well favoured, though it is difficult to ascertain whether for legitimate reasons of feeding abilities or because of traditional beliefs. It is well known, however, that the Angus crosses are not as capable as the Herefords of foraging for themselves and this could be a decisive factor if the calves were to be kept outdoors.



## SUMMARY

About one half of the calves for eventual feeding bred from the beef and dairy herd in Scotland are reared throughout the calf stage on the farms where they are bred. The other half are moved to other farms and these together with calves imported from England and Wales gave rise to a total movement of 281,000 during 1966.

Dairy and dairy cross calves which enter the store trade in Scotland are moved off the farms where they are bred at several weeks to several months old and most of them are purchased by farmers who sell them again as older store cattle i.e. at the yearling or older stages. Almost all the English calves are of this type and within Scotland supplies originate mainly within the South-West Region. Farmers in all the Scottish regions outwith the Highland Region purchase considerable numbers of these calves but farmers in the North-East Region buy by far the largest number and therefore movements to this region are the most outstanding feature of the distribution pattern. A proportion of the calves from both countries are moved by dealers but it is particularly the English calves which are transferred in this way.

The patterns of movement of pure-bred beef calves are similar to those for dairy calves in that movements to the North-East Region predominate over all the others. When examined on a more detailed scale, however, it is apparent that the distribution of suckled calves differs considerably from that of young dairy and dairy cross calves. In particular, a larger proportion of the suckled calves are distributed to farms in the intensive arable areas. This reflects the fact that suckled beef calves are sold at 7 to 12 months of age which means that many of them are suitable for direct feeding. In contrast, the dairy calves, being very young, are more suitable for rearing and storing and

therefore they are distributed to farms in the semi-intensive arable and semi-upland areas.

The proportion of these calves of whichever type or origin which are resold contributed heavily to the movements of older stores which will be examined in the following chapter. However, as will be shown there, cattle bred on Scottish farms but not previously moved and cattle from Ireland are also both important contributors to the older store trade.

## CHAPTER VII

## MOVEMENT OF STORE CATTLE FOR FEEDING: OLDER STORES

Number Moved:- An estimated total of 373,000 marketings of older store cattle for feeding<sup>1</sup> took place in Scotland during 1966, the numbers by type being as follows:

Scottish beef stores	-	156,000
Scottish dairy stores	-	75,000
English, mainly dairy, stores	-	80,000
Irish beef stores	-	62,000
total	-	<u>373,000</u>

These figures, however, include instances of the same cattle being marketed more than once during the year. Making allowances for this, the number of different cattle marketed as opposed to total marketing was:

Scottish beef stores	-	120,000
Scottish dairy stores	-	70,000
English, mainly dairy stores	-	67,000
Irish beef stores	-	42,000
total	-	<u>299,000</u>

In addition to these, 33,000 Irish stores were moved direct from ports to farms without passing through auction markets and another 5,000 were distributed from accommodation land to farms after having been marketed once but not sold. Furthermore, about 20,000 Scottish and English bred stores of all types would have been transferred privately outwith the auction system.

Number Recorded:- Unfortunately, it was not possible to trace the 20,000 Scottish and English bred stores moved privately or the 5,000 Irish stores moved from accommodation land to farms. On the other hand, the 33,000 Irish stores moved directly from ports to farms and over one half of the 42,000 marketed Irish stores were traced. Most importantly, however, 272,000 or 83 per cent of the total marketings of Scottish and English bred stores were recorded; moreover, in each region the recorded movement represented over two-thirds of the estimated regional total (Table 68). Hence it can be seen that both in terms of numbers recorded and areal distribution the coverage was a comprehensive one.

Types Recorded:- Ideally it would have been desirable to analyse separately the movements of each of the four main groups of stores. This was done for Irish cattle because their movements are recorded by the veterinary authorities. But it was not possible for the other three types because they are not recorded separately in the auction market records, at least not on a consistent basis. Hence they had to be treated as one group, henceforth designated as the home-bred group. This nomenclature is appropriate because most of the stores within the group are, in fact, home-bred in the sense of being born in Scotland. Moreover, the English stores, although not strictly speaking home-bred, were "adopted" at an age of 3 to 6 weeks old. Then, too, the term home-bred group is a useful one to distinguish it from the Irish stores which are 'bona fide' imports.

With these necessary preliminaries completed, the stage is set for a more detailed analysis of movement; this begins with an examination of the supply and movement to markets of home-bred stores.

## SUPPLY

(A) Home-Bred Supplies

## Number and Type

All the home-bred older store cattle distributed from markets in Scotland during 1966 came from farms within the country. The 67,000 older stores designated as English were not brought into Scotland as older stores. Rather, they represent that part of the 79,000 young English calves which were bought for storing and resale, the other 12,000 having been fattened on the farms to which they were initially distributed (Table 67 and pp. 358, 369). Similarly, the 70,000 Scottish-bred older dairy stores represent that proportion of the 132,000 dairy calves for feeding which were resold at over 1 year and the others were fed on the farms where they were bred or purchased as calves and then fed without resale at over 1 year. Finally, the 120,000 older beef stores comprise cattle which were purchased as suckled calves for resale as stores over 1 year of age and cattle which were retained on the farms where they were bred until sold as older stores.

Sequence of Supplies:- Although considerable numbers of home-bred stores are marketed in each month of the year, there are marked peaks in the spring and again during the autumn. Marketings are heaviest in the spring, 38 per cent of the total being sold in the months of March, April and May as compared with 28 per cent in the three highest autumn months of September, October and November (Table 80). The spring peak arises for two main reasons. First, many semi-upland and upland farmers can retain their own or purchased calves over the winter but these must be sold in the spring to release farm resources for use by the newly-born calves. Second, demand and hence prices for stores is higher during the spring than at any other time of the year owing to the high demand for cattle to stock summer grazings. The autumn peak is



mainly due to the demand for stores to feed over the winter in courts and to the necessity for farmers who have grass but little winter feed to sell their stores at that time.

Besides these differences in numbers marketed during the spring and autumn, there is also a difference of age. Most of spring stores are yearlings to six-quarters, i.e. animals which were born the previous winter. The autumn-sold stores are likewise chiefly beef types but most of them are six-quarters to two years old. The majority of these autumn supplies come from farmers who purchased the stores one year previously. Others are sold by farmers who purchased them at the spring sales during the same year but this is not a common practice because of the spring-autumn price differential (p. 399). An even smaller proportion of the autumn stores, accounting for most of the remainder, comes from the farms on which they were bred.

Underlying or supporting these spring and autumn peaks, there is a more regular pattern of supplies. These supplies are composed in large part of dairy stores and the more regular pattern of marketings is a reflection both of the more evenly distributed births of dairy as opposed to beef calves and of the greater variety of ages at which they are sold.

#### Supplies and Markets

The sequence of older store cattle supplies provides a convenient basis for classifying the markets at which they are sold. Thus, regular and seasonal markets can be recognized and the seasonal markets can be further categorized as to those which hold sales during the (a) spring only, (b) autumn only, (c) spring and autumn (Map 53).

In accordance with what has been said above about the marketing

sequences of the various types of home-bred supplies, it follows that seasonal markets tend to be located in areas where most of the supplies are of Scottish-bred beef stores, that is, in the semi-upland and upland areas (Map 53). Moreover, because supplies of these stores are more plentiful during the spring (Table 80), there are more spring than autumn markets. The sequence of supplies at markets in lowland areas reflects the importance of home-bred beef supplies in the spring and autumn (Table 80) but they are almost all regular markets because:-

- (1) It is to and from farms in the lowland areas that most of the dairy stores are moved and, as mentioned earlier, marketing of these stores tends to be more evenly distributed throughout the year than beef stores.
- (2) Supplies of beef stores, too, are more evenly distributed throughout the year in the lowland areas because the factors of soil, climate and grazing exert less control over the sequence of marketings there as compared with more marginal farms.
- (3) Markets in the lowland areas have a greater total throughput and in consequence have greater chance to obtain supplies throughout the year.

#### Regional Patterns of Marketing and Types of Stores

Highlands Marketings of older stores in the Highland Region form a much lower proportion of total Scottish marketings than was the case for suckled calves. This difference arises because proportionately more suckled calves are moved out of the Highland Region and also because fewer dairy calves are reared there. These factors, and also the small throughput at most markets, leads to the situation whereby this region, above all, is one of seasonal markets. Indeed, of the 29 markets,

only six - Lerwick, Dingwall (2), Inverness (2) and Oban - hold sales in each month of the year (Map 53). Within this predominantly seasonal pattern, there is a marked difference between the north and the south. From Corpach northwards, including Skye and Lewis and Harris, marketings are more concentrated during the spring of the year than they are in the southern area (Table 80). This difference is in large part due to the fact that, owing to a higher proportion of Angus as compared with Shorthorn or Highland blood, the northern stores are faster maturing than the southern ones (p.381). And, arising from this proportionately more of the northern stores are ready for sale during the spring and more of those which are sold are suitable for fattening. This in turn means that more of the northern stores go out of the area because it is stores for feeding which are in highest demand by purchasers from outwith the Highland region. Conversely, there is a high local demand for stores to summer and resell during the autumn and since there are more of these in the south they, together with home-bred stores, give rise to the higher autumn peak there.

North East In contrast to the Highland Region, a larger proportion of the total Scottish marketings of older stores than of suckled calves took place in the North-East Region (Tables 70 and 81). This relative increase is due not only to the large number of suckled calves moved into the region, a considerable proportion of which are sold again as older stores, but also because this region receives the majority of the dairy calves from England as well as a high proportion of those bred in Scotland (Table 67). It should be noted, however, that very few dairy stores are sold at markets in Orkney and Caithness or at the seasonal markets in the five southern counties.

Spring and autumn peaks of supply are evident at markets in the

in the North-East Region but these are less pronounced than in any other Scottish region. In essence, this is due to the high demand throughout the year for older stores for feeding (Table 82). To meet this continuous demand, suckled calves and dairy calves are imported for later sale as older stores and, in addition, dealers bring in older stores from other regions when local supplies are insufficient. The importance of regular markets in the region is, of course, a direct result of this continuous demand (Map 53).

An interesting feature of the marketing pattern in the North-East Region is the specialisation of each of the three Aberdeen markets upon one type of older stores. Kittybrewster handles the poorer quality and younger stores, in particular the dairy and nondescript beef types. Belmont specialises in Irish, Orkney and Zetland cattle and Central concentrates upon "top" quality advanced stores (six-quarters and two year olds), most of which are from local farms but including an important minority brought by dealers from other regions. This type of specialisation is unique in Scotland and arises because it is only in Aberdeenshire that supplies of each type are large enough to make a separate market economically viable.

East Central The striking feature of the sequence of supplies in the East-Central Region is the concentration in March, April and May. Indeed, over half of the 28,000 older stores sold during 1966 were marketed during these three months (Table 80). This concentration is due to there being a considerable number of semi-upland and upland farms in this region which, although they support beef breeding herds, do have surplus winter feed and accommodation which enables them to carry over a large number of their own or purchased suckled calves for

sale in the spring, at which time the requirements of the newly born calves make disposal of the older stores necessary. Supplies at Aberfeldy, Killin and Blairgowrie are almost all of this type. Perth and the other regular markets and also receive supplies from the glens and foothills of the eastern Grampians (Map 60), but they receive additional regular supplies of beef and dairy stores from the lowland areas.

South East Older store cattle sales at the southern, or Border, markets are of relatively recent origin and have arisen, of course, because of the increase in beef breeding herds and hence of store cattle of all ages. However, the very marked spring concentration is more difficult to explain (e.g. St. Boswells - See Table 80), especially in view of the fact that it developed some years after the initial increase in the beef cow herd. The main reason for this spring concentration is that in the past five to ten years it has become increasingly common for farmers to keep their smaller calves over the winter to sell as yearlings to six-quarters during the spring, hoping thereby to achieve better financial results than if they were sold in competition with more forward calves at the autumn suckled calf sales. In addition, a considerable number of smaller and rougher calves from Oban are bought by upland and semi-upland farmers (pp.388-389), and these, too, are usually sold as older stores in the spring. Not all the smaller calves are suitable for selling as stores during the spring, however. The least advanced of them are kept over the summer for disposal at the autumn store sales which, although overshadowed by the spring sales, are nevertheless an important feature of the Border marketing pattern.

Of the six markets outwith the immediate Border area, Haddington handles only Irish stores and Peebles only suckled calves. Supplies



at the Edinburgh markets (3) and Bathgate are more regularly distributed but more varied in type than at the Border markets. Dairy stores, particularly Friesian bullocks, and beef stores are of about equal importance.

South West The outstanding feature of supplies of older stores in the South-West Region is the high proportion of them which are dairy or dairy cross cattle. Indeed, as indicated by a recent survey, 57.5 per cent of the clean fat cattle produced in the region were of this type, a figure made use more striking by the fact that in no other Scottish region was the proportion over 25 per cent.<sup>2</sup> This emphasis, is of course, a direct result of the concentration of dairying in the region. This notwithstanding, the importance of dairy stores has been increasing in recent years because of the rapid increase in Friesian cross Ayrshires at the expense of pure Ayrshires.<sup>3</sup> In addition, more English calves for rearing and eventual sale as older stores are being imported than in the recent past. Dairy stores, most of which are Friesian and Friesian cross Ayrshire bullocks but also including Hereford cross Friesians and Shorthorn cross Ayrshires, form the bulk of the supplies at Ayr, Kilmarnock, Paisley and Wishaw. Dairy stores are of less significance at Stirling and Lanark but they still account for about one half total supplies. Markets in Galloway and Dumfries draw a much greater proportion of their supplies from beef stocks of which Galloways, Blue Greys and Hereford crosses are the main types. Newton Stewart is noted for its sale of 2 to 2½ year-old Galloways and Blue Greys which are usually born and reared for the entire period on upland or hill farms in the vicinity and are sold in the autumn to give rise to a marked peak at that time of year (Table 80). And, as will be shown, these older stores are much sought after by feeders;

indeed it is only at Newton Stewart, Oban, Tiree, the Uists, Rhynie and Lower Cabrach that older stores of this same general type are available in considerable numbers (Maps 53).

(B) SUPPLY OF IRISH STORE CATTLE

Number and Type

During the period 1963-68, an annual average of 101,661 Irish stores have been moved onto Scottish farms (Table 83). This, however, conceals a considerable variation in the yearly totals which were (including stores for breeding):-

1963 - 99,299	1964 - 122,760	1965 - 97,102
1966 - 85,852	1967 - 100,174	1968 - 105,245

Such variations are, and have been for many years, a characteristic of the Irish cattle trade and occur for many reasons e.g. there was a marked decline during the period 1957/58 to 1959/60 because Scotland was much more advanced than Ireland in the eradication of tuberculosis;<sup>4</sup> a shipping strike which lasted most of May and June (Table 84) as well as numerous changes in export and import regulations,<sup>5</sup> led to a sharp decline in 1966. These causes of fluctuation are, however, only short term ones which may or may not recur. In addition to these there are, as it were, built in features of the trade which are the most important causes of variations in the long run. The basic long term cause of variation is that Irish stores are reserve supplies, that is, they are increased or decreased, often very suddenly, as conditions of supply and demand in Scotland dictate.

Notwithstanding these shorter or longer term fluctuations there has been a downwards trend in Irish store cattle imports for about forty years (p.355). This decline is due largely to increased

supplies from home-bred sources, i.e. English and Scottish, but fewer imports from Northern Ireland owing to more intensive farming methods and the U.K. Fatstock Guarantee payment for fat cattle there have been important contributing factors.

Another important change in recent years, has been the rapid increase of heifers at the expense of bullocks (Table 85). This is due in part to the increased demand for breeding heifers (pp. 342-3), but it is mainly due to the fact that more heifers for feeding are being imported. This latter increase stems from the fact that, whereas in the recent past Irish stores were valued, above all, for their ability to produce dung, now they are valued chiefly for their suitability for commercial beef production. In this regard, heifers are especially suitable because they mature more quickly than bullocks, a factor of considerable importance owing to the increasing demand for younger beef (p. 408). Moreover, the period for which stores from Eire must be kept before qualifying for the U.K. Fatstock Guarantee has recently been reduced from 3 to 2 months and this, too, favours the faster maturing heifers.

#### Sequence of Supplies

Broadly speaking, the sequence of Irish cattle supplies is similar to that for home-bred stores. Thus, supplies are available throughout the year but are particularly high during the spring and autumn. That said, it should be noted that the peaks for Irish cattle tend to be earlier (February and March instead of April and May) and later (October and November instead of September and October) than for home-bred cattle and that Irish supplies are highest during the autumn rather than during the spring (Tables 80 and 84).

At this point, it is sufficient to note that these differences exist.

They and other features of the sequence of Irish cattle supplies are more properly discussed in later sections dealing with demand and movement.

#### DEMAND AND MOVEMENT

In the preceding section, the main features of the supply and marketing of older store cattle have been examined. This is, of course, only one part of the total picture of movement; the other part, demand and distribution from markets to farms, will be discussed here.

#### Total and Regional Demand

The recent trend towards fattening of cattle at younger ages, illustrated by the following figures, has had important implications for the movement of older stores. It has meant that the length of the "store" period has been curtailed or eliminated completely with the consequence

#### Age at Slaughter of Clean Fat Animals: United Kingdom.<sup>6</sup>

	Over 2 years	1 - 2 years	about 1 year
	%	%	%
1960	74	25	-
1961	64	34	2
1962	57	40	3
1963	49	42	9
1964	47	41	12

Frequency Disbribution for Age at  
Slaughter, 1964 - 65 to 1968 - 69: Scotland<sup>7</sup>

Clean Fat Animals Age at Slaughter (months)	1964/65 %	1965/66 %	1966/67 %	1967/68 %	1968/69 %	Average %
1 - 6	0.1	0	0	0	0	0
6 - 12	2.9	1.6	1.2	0.4	1.5	1.5
12 - 15	3.7	4.7	2.8	2.5	4.7	3.7
15 - 18	5.0	3.2	4.3	6.4	5.2	4.8
18 - 21	7.6	14.0	10.0	18.5	14.2	13.0
21 - 24	26.1	30.4	38.0	46.9	43.7	36.9
24 - 27	29.6	31.1	28.7	13.8	15.9	23.7
27 - 30	11.5	6.4	9.7	6.9	8.7	8.6
Over 30	13.5	8.6	5.3	4.6	6.1	7.8
Average Age	24.32	23.56	23.52	22.69	22.81	23.39

that older store cattle are moved less than formerly. Thus, whereas ten to twenty years ago it was common for a yearling beef store to be sold in the spring and then change hands three or four times before fattening, it is now much more likely that the purchaser at the yearling stage will fatten it without further prolongation of the store period. Indeed, it would appear that as much as 40 to 50 per cent of the stores bought as suckled calves are not resold again as stores. The figures on pp. 408-409 include all types of clean fat cattle, however, and as such they conceal considerable variations amongst the different types and sources of stores. For example, animals fed on the farms where they were bred tend to be fattened at younger ages than those bought as stores and this probably occurs because of more intensive rearing and feeding. Differences in age at slaughter also stem from the varying ages at which stores are purchased, it being generally true that the younger the store is at the time of purchase, the sooner it will be fattened. An indication of



this is given by the figures below<sup>8</sup> (note: most of the home-bred stores, i.e. English or Scottish, are bought at the yearling to six-quarter stage in contrast to the Irish stores, most of which are bought at the six-quarter to two-year old stage).

Age at Slaughter	Home-Bred	Irish
	%	%
15 - 21 months	6.2	1.6
21 - 30 months	86.0	68.5
Over 30 months	7.8	29.9

Furthermore, there are significant differences between the rates of maturity of home-bred beef and dairy stores (see figures below<sup>9</sup>).

Age at Sale for Slaughter: Home-Bred (English or Scottish Bred) Cattle

Age at Slaughter	Beef Breeds	Dairy Breeds	All Breeds
	%	%	%
Up to 15 months	2.0	8.5	3.7
15 - 21 months	18.6	9.5	16.3
21 - 30 months	71.2	65.0	69.6
Over 30 months	8.2	17.0	10.4
	100.0	100.0	100.0

Thus, discounting the cattle fattened at up to 15 months (since these would not have been purchased as stores over 1 year of age), it can be seen that it is the Irish and dairy stores which are fattened latest and beef stores which are fattened earliest. The implication of this for store movement is that the Irish and dairy stores are proportionately much more important in the movement of older stores than they are in the total output of clean fat cattle. Thus, whereas Irish stores formed 16 per cent of the output of clean fat cattle during 1966, they accounted for 21 per cent of the stores sold at over 1 year. Similarly, stores derived from English calves accounted for 19 per cent

of the older store cattle marketed as compared with 16 per cent of the clean fat cattle. Moreover, if the number of movements at over one year were considered rather than the numbers moved, the proportion of dairy cattle would be much higher since, on average, they are moved more often than Irish or home-bred beef stores. Another implication of the age at slaughter statistics is that the vast majority of the marketed older store cattle are for feeding rather than for storing and resale. Moreover, the proportion bought at over one year of age for resale is even less than might be expected from the age at slaughter statistics because:

- (1) The statistics include Irish stores which, although slaughtered later than home-bred cattle, are moved only once.
- (2) In terms of age, it is the yearlings to six-quarters which have the highest potential for being resold as stores. But since most of them are sold during the spring when prices are high, it is not common for them to be sold in the autumn and, having passed this period, they are likely to be fattened without resale as stores (p.399).

The demand for store cattle over 1 year old is, then, essentially a demand for cattle to feed. Hence, in order to understand the distribution patterns and lines of movement, it is necessary to examine the regional characteristics of fat cattle production.

#### Systems of Feeding

Until 20 years ago, there were two distinct methods of fattening cattle in Scotland, off grass during summer and in courts on arable by-products during the winter. Now, however, a considerable number of cattle are fed on grass for several months, then finished in courts or fed in courts for several months, then finished off grass (see figures

below<sup>10</sup>).

System of Feeding of older stores	% by Region					% Scot-land.
	N.E.	E.C.	S.E.	S.W.	Hd.	
Court fed and court finished	17	24	51	20		25
Grass fed and court finished	38	36	27	27	No	34
Court fed and grass finished	31	22	13	15	Data	23
Grass fed and grass finished	14	18	9	38		18
	100	100	100	100	100	100

The relationship between systems of feeding and store cattle is a complex one but it can be said that it is the system of feeding which largely determines the sequence and type of older stores purchased rather than the availability and types of stores which determines the system of feeding. And, since the systems of feeding is an outcome of the farming type which in turn includes such factors as crops grown, farm size and types of stock kept, these, too, must be examined.

#### System of Feeding and Types of Farm

Court finishing is associated with arable farming; in particular with the intensive arable areas of Scotland, i.e. The Merse of Berwick, the Lothians, Strathmore, north and east Fife, the Moray Firth and Easter Ross. This association has arisen because crops, such as short-term ley grass, turnips and kale, which are grown primarily to keep the land in "good heart" for corn, must be disposed of during the winter and cattle feeding in courts provides one way of doing this. Were this the only consideration, however, court feeding would not be as common as it is. Indeed, farmers often only cover their costs or even lose money on court feeding if one considers only the income from fat cattle and discounts the expenditures for store cattle, labour, feed and accommodation.<sup>11</sup> However, an essential feature of this system is that

arable by-products, which would be difficult to dispose of otherwise, are converted into dung which in turn, increases the intensity of crop production. These benefits are difficult to measure in economic terms but it is they, rather than the beef enterprise, which are often the deciding factor as to whether court feeding will be continued. And since dung is more important for potato growing than for other arable crops it is, above all, in the potato-growing arable districts that court feeding is most common (Map 65).

That said, it should be noted that the use of artificial fertilizers, the more stringent economic situation, the greater emphasis on commercial beef production (p.407) and the trend towards continuous corn growing in the intensive arable areas have all mitigated against court feeding in recent years.

Grass finishing, like court finishing, is found in all the feeding areas of Scotland but is more important in some areas than in others. The area most heavily committed to grass finishing is the dairying region which includes the lowlands of the South-West Region and extends into West Lothian and Fife (Map 4). Elsewhere grass finishing is most important in the semi-intensive arable areas of eastern Scotland where rotations commonly include 2 to 3 years ley grass, e.g. central and eastern Aberdeenshire and the semi-uplands of the lower Tweed valley.

The distribution of grass does not, in itself, explain the volume or scale of grass finishing. Indeed, more cattle may be fed off grass in an area which, in proportionate terms, is less devoted to this method of finishing than another area. Thus, although only 45 per cent of the cattle in the North-East Region are finished on grass, the total numbers fattened are much greater than in the South-West Region where

53 per cent of the cattle are finished on grass. This difference is a reflection of the greater relative emphasis on cattle feeding in the North-East and occurs mainly because of the emphasis on dairying in the South-West Region.

A similar situation holds true for court feeding; for example, although court feeding is less important in relative terms in the North-East Region, more cattle are fed in this way there than in the East-Central or South-East Regions (see figures, p. 412). This is due in part to its more extensive lowland area but is also due to the following factors:-

- (1) Oats, a larger proportion of which is devoted to court feeding than wheat or barley, is more important in the North-East.
- (2) There is a greater emphasis on cattle breeding and feeding in the North-East as compared with the Merse of Berwick, where sheep are found on similar types of land/farms, and the Lothians and Strathmore, where cropping is more important than livestock.
- (3) Small arable farms are of greater importance in the North-East and, to be economically viable, they are more heavily stocked with cattle than the larger arable farms of the two southern regions (see also p. 376).

#### Types of Fattening, Sequence of Purchases and Type of Stores

It has been suggested that store cattle for immediate feeding purchased from August to January are for court feeding and those purchased from February to July are for grass feeding.<sup>12</sup> Although somewhat blurred by changes in feeding practices since it was suggested, this division is an appropriate one for the present day, too. However, it was not possible to determine which of the store cattle moved at over one year of age were for immediate fattening, which were for storing,



then fattening, and which were for resale later as stores, so that this division could not be used as a guide to the demand for stores to court or grass feed. However, it was known that most of the stores purchased would have been kept for feeding rather than for resale as stores (p. 411). Moreover, owing to younger ages of slaughter (p. 408), it could be assumed that most of the stores would, in fact, have been fattened straight away without a further store period. Nevertheless, some alteration had to be made to accommodate that proportion of the cattle which would have required a further store period. Hence, it was decided to use the period January to June as a guide to purchase for grass feeding and the period from August to December as a guide to purchases for court feeding (Tables 86 and 87). These are, of necessity, only approximate divisions but together with other information they are useful to an understanding of movement of older stores.

From calculations based on these assumptions (see figures below) it is evident that, although home-bred and Irish cattle are purchased during each period, home-bred supplies are relatively more important during the grass feeding period and Irish supplies are relatively more important during the court feeding period.

Purchased Supplies of Older Store Cattle - 1966  
% of Total Supplies

January to June			July to December			Year		
Home-Bred	Irish	Total	Home-Bred	Irish	Total	Home-Bred	Irish	Total
42.0	9.5	51.5	31.0	17.5	48.5	73.0	27.0	100.0

Furthermore, as shown by the following figures and by those on page 412, Irish cattle are of greatest relative importance in the East-Central and South-East Regions where the emphasis is on court feeding; conversely, home-bred cattle are of greatest relative importance in the South-West,

North-East and Highland Regions where there is a greater emphasis on grass feeding.

Types of Older Stores Purchased - 1966

% by Type

Regions	Home Bred	Irish	Total
Hd.	98.0	2.0	100.0
N.E.	82.0	18.0	100.0
E.C.	49.0	51.0	100.0
S.E.	47.0	53.0	100.0
S.W.	85.0	15.0	100.0
Scotland	73.0	27.0	100.0

Analysis along these lines, although useful for assessing relative requirements demands for different types of stores, is limited in that the numerical distribution of each type differs considerably from the percentage distribution. Thus, as shown by Map 70, a considerably greater number of Irish stores are distributed to the North-East Region than might be expected from this discussion. Moreover, no information is given as to the types and inter-regional movements of home-bred supplies. These features will be examined below, beginning with an analysis of the movement of home-bred supplies.

(A) Movement of Home-Bred Supplies

During 1966, an estimated total of 330,469 movements of home-bred older store cattle took place at 102 markets throughout Scotland (Map 66). The entire movement from 52 of these markets was traced and three others were recorded in part. These 55 markets accounted for 83 per cent of the estimated total throughput and in no region did the recorded movements fall below two-thirds of the regional total (Table 68). With allowances for remarketing by dealers and for the fact that a small

proportion would have been sold twice with an intervening store period, the 330,000 movements would represent some 250,000 different cattle. Dealers remarketings accounted for about 50,000 of these "double entries" and, although the movements of individual animals handled in this way could not be traced (p.359), the main patterns of transfer amongst markets were determined. Very little information was available regarding the 30,000 bought by farmers at the yearling or older stages for resale after a store period, but it is known that almost all of them are accounted for by stores bought at markets (a) one year previously at autumn sales, (b) six months previously at spring sales (see also p. 400).

#### General Pattern of Movement

Although considerably greater numbers are involved, the patterns of distribution and lines of movement of older store cattle are similar to those for suckled calves. Thus, farmers in the North-East Region draw upon local supplies and also upon supplies from all the other Scottish regions. Moreover, "imported" stores are drawn chiefly from the Highland and South-West Regions as they were for suckled calves (Table 81 and Maps 66 - 68). Similarly, too, the vast majority of the movements of cattle out of the North-East Region and amongst the other regions are, in effect, local movements (Tables 86 - 88 and Maps 67 and 68). Furthermore, the longer distance movements in the south are almost all accounted for by transfers from the south-west Highland markets eastwards to Lanark, Stirling, Strathmore, Fife, the Lothians and Berwickshire (Tables 86 to 88 and Maps 67 and 68). Movement to England, too, is much the same for both calves and older stores, viz. they are bought at markets in the Borders and central Scotland and are distributed mainly within north England (Map 66 and Tables 89 and 90).

There are several reasons for this general similarity in the movement and distribution pattern for the two types of stores. First, similar patterns of excess supply and surplus demand exist on a regional scale. For example, more stores of both types are produced in north Scotland than can be stored or fattened there and these are moved considerable distances to meet demands in excess of local supplies in the Aberdeen-Moray Firth area. Second, since farmers usually use the same local markets for both calves and older stores, short distance movements, too, are very similar. For example, farmers in the East-Central Region buy both types of stores from markets in that region and also from nearby markets such as Kittybrewster, Lanark and Stirling. Third, storing and fattening areas, if not coincident, do overlap to a large degree, and hence distribution patterns for calves is much the same as for older stores.

In summary, then, it can be said that the process of concentration in east and north-east Scotland which was begun at the suckled calf stage is continued and increased by the movement of older stores to these areas (Maps 61, 62, 67, 68 and 69). Because of the many points of similarity between the two types of stores with regard to movement and distribution patterns, much of what has been said by way of explanation in the previous section on suckled calves also applies to older stores and hence does not require further discussion. However, there are some important points of difference which will be examined briefly below.

North-East Region (excluding Orkney and Caithness):- An important minority of the stores over one year of age purchased by farmers in the North-East Region are yearlings to six-quarters which are not suitable for immediate fattening. Some of these are kept on

a store diet, then fed, but a considerable proportion are kept for six months to a year and then sold to feeders who specialise in putting a "finish" on the animals. This latter practice is much more common in the North-East Region, particularly in Aberdeen, than elsewhere in Scotland and it means that it is in this region that the vast majority of "double entries" (p.417) takes place.

For whatever purpose, a greater proportion of the supplies of yearlings to six-quarters than even older stores are drawn from outwith the North-East. One reason for this is that there are a large number of rearing farms in the North-East Region and this gives rise to a large inward movement of yearlings to six-quarters which, as mentioned above, are later sold locally, thus reducing the need for "imported" older stores. Then, too, a considerable proportion of the six-quarters to two-year old store supplies are Irish. These are, of course, from outwith the region but are not part of the "home-bred" supplies to which the above statement refers.

Movement of home-bred stores into the North-East is, then, in large part the movement of yearlings to six-quarters. Supplies of these are drawn from all over Scotland and in all months of the year but different areas supply different types and at different periods. Supplies from north Scotland, i.e. Inverness north to Zetland, are chiefly yearlings to six-quarters and are in greatest supply during the spring months (Tables 86 and 87). The other main supply area is the South-West Region; supplies of yearlings and six-quarters from this source are of all types but dairy stores predominate. These, too, are in greatest supply during the spring but they are available on a more regular basis than stores from north Scotland owing to the importance of dairy stores amongst them (p.400). Supplies of six-quarters to

two-year olds are purchased in large part within the region or from Ireland, but some are brought in other Scottish regions. Purchases in the autumn at the northern markets are predominantly of this type but it should be noted that there is a large minority of younger stores. Orkney is a particularly important source of older store cattle and the high quality and forward nature of the Angus cross stores from there make them very popular with feeders in the Buchan area of Aberdeen. Forward stores, a high proportion of which are dairy or dairy cross animals, are also brought in from the South-West Region. Finally, Oban is a minor, but important, source of 2 to 3 year old stores (Table 71). Within the North-East Region itself, stores of a wide variety of ages and types are sold and bought by local farmers. Kittybrewster is the chief supplier of yearlings, of which large numbers of beef and dairy types are sold throughout the year. Some younger stores are also sold at Belmont but its throughput is composed mainly of six-quarters to two year olds, of which those from Orkney are of greatest importance (p.403). Central Mart, on the other hand, specializes in supplying high quality locally-bred forward stores to feeders in the Aberdeen-Buchan area who put a "finish" on such cattle and in the process receive a premium for high quality "Aberdeenshire" beef. Turriff and Maud are also important suppliers of stores to these feeders whilst a large number of other markets sell stores of a more mixed type for feeding or for storing.

Other Scottish Regions:- Except for the Highland Region, which only exports stores, there are inward and outward movements amongst the other Scottish regions but most of them are of a local nature. Thus, the Lothians, Lanark and Stirling fall within the natural supply area of Perth market and Angus, Perth, Fife, Kinross, the Lothians, Berwick



and Roxburgh fall within the natural supply area of Stirling and Lanark. Such movements and those within the regions themselves require little explanation other than to note that most of the stores are fed, with or without a further store period, on the farms to which they are distributed.

There are, however, some longer distance transfers, the most noteworthy of these being from Dingwall and Huntly to Strathmore and the Lothians and from Oban and Tiree to these areas and to Lanark, Stirling and Ayr (Table 88). The stores moved south from Dingwall and Huntly are high quality forward stores - mainly cross Angus but including cross Shorthorn - which are suitable for rapid finishing off grass if bought during the spring or in courts if bought during the autumn. Most of the stores moved eastward from Oban and Tiree are 2 to 3 year olds, such ages being due to the slower maturing Highland and dairy blood in them and the propensity for crofters to keep them on store diets for longer periods than is normal. Stirlingshire farmers in particular are heavy buyers of advanced spring stores which they fatten off lush grazings in that area (Table 76). These stores, and the spring stores sold for summer feeding in general, tend to have a stronger Highland strain in them than their counterparts for winter feeding. This occurs because it is well known amongst feeders that the Highland types, owing to their heavy coats, sweat heavily when confined in courts and this, together with winter conditions, makes them prone to pneumonia. Farmers in the East-Central and South-East Regions also buy a considerable number of these spring stores for grass fattening and, in addition, they take most of the autumn stores, a large proportion of which are Shorthorn and dairy cross types, for feeding in courts. Finally, a large number of six-quarters and some two year olds are bought by local crofters and farmers for further storing and

resale the following spring or autumn (Table 76).

Movement to England:- Although the two southern Scottish regions supplied most of the suckled calves and older stores to England during 1966, a far greater proportion of the latter came from the South-West Region (Tables 78 and 89). The main reason for this is that although suckled calf breeding is important in both areas, the South-West Region is, to much greater degree than the South-East Region, a storing rather than a feeding area. Thus, not only are proportionately more suckled calves in the South-West Region sold again as older stores but also a large number of dairy stores reared from the calf stage are added to the total supply. Moreover, fewer in proportion of the older stores marketed are bought by local feeders in the South-West as compared with the South-East Region and hence more are available for movement from the South-West Region to other Scottish regions and to England.

The distribution of older stores within England differs from that of suckled calves in that proportionately more of the older stores are sent to north England (Tables 78 and 89). This statement is somewhat misleading in that a large number of the older stores are taken by dealers to Hexham market from whence they are distributed all over England (p.394). Even making allowances for this, however, the difference is a real one and arises in the following way. The bulk of the suckled calves are sold at a limited number of large sales during September and October. This allows buyers from mid and south England to purchase all their supplies at one or two closely spaced sales, thereby minimizing overheads in terms of travel expenses, losses of time and costs of transport for the cattle. For the same reasons they can, and do, attend the large store cattle sales but this is not so for the considerable number of smaller sales held throughout the year. On

the other hand, buyers from north England attend all the sales, large or small, and hence take a larger proportion of the older stores than suckled calves.

The only other important point to note is that Oban is the principal centre outwith the two southern Scottish regions. Stores with a high proportion of Highland blood are particularly popular, not only because of their suitability for grass fattening (including those stored outside during the winter on rough grazings for fattening the following summer) but also because of their fascinating appearance, it being a long established custom for estate policies in England to be stocked with these shaggy, horned and apparently formidable cattle.

#### (B) Movement of Irish Supplies

In recent years about two thirds of the total imported Irish store cattle have come from Eire and one third from Northern Ireland and with the exception of a very small number, all have been landed at Scottish ports (Table 85). In 1959, four ports landed some Irish stores but since 1965 only two, Glasgow and Stranraer, have been used (Table 84).

#### Onward Movement from Ports

With the exception of a very small proportion (less than one per cent) bought in Ireland by Scottish farmers themselves, the Irish cattle brought into Scotland during 1966 were imported by dealers, most of which reside in Scotland but were born in Ireland, as is implied by such names as O'Toole, McGarrigle and Sherridan. This "dual nationality" is advantageous in that the dealer can assess the demands of farmers in the area of Scotland in which he resides and at the same time, through his connections with Ireland, he is well placed to see that these demands are met. This he may do by "commuting" to and from

Ireland himself or by having purchasing agents there who endeavour to supply cattle to his specifications. By whichever method the cattle are purchased, the cattle are sent to Merklands Wharf, Glasgow and, after being unloaded, they are kept for a compulsory period (10 hours) at Merklands lairage during which time they are fed, watered and identified, i.e. their left ear is punched and tagged to indicate that they are Irish cattle.

At this juncture, the dealers must take out a licence, a copy of which is later distributed to Divisional Veterinary Officers who are located in centres throughout Scotland. Two types of licenses are issued, one for movements directly from ports to farms and the other for movements from ports to markets (Table 91). Most of the former are "order" cattle, that is, they are sent to farmers who have previously made arrangements with the dealers for a certain number and type of cattle to be sent to them on or about a particular date. In such cases, the farm address of the buyer is listed on the licence and the cattle can be assumed to have gone there until fattened. Since access was provided to these licences, all the Irish cattle moved in this way were traced. However, these licences include instances of dealers sending the cattle to their own farms or rented grazings in which case they may be fattened, but it is more likely that they will be kept there for the six-day detention period and then sold to farmers privately or through auction markets. And, since the veterinary authorities are not required to keep records after expiry of the six-day detention period, the ultimate distribution of these cattle could not be determined. Cattle moved by the second method, that is, from ports to markets, can be thought of as "dealers' cattle" in the real sense that, unlike those moved from ports to farms, they are not for any particular farmer but

rather are put forward for sale by auction to the highest bidder. Marketings of these cattle take place within the six-day detention period and if they are sold to a farmer a licence is taken out in his name and hence the cattle could be traced. However, if they are not sold, they are licensed by the dealer to his or the market's grazings, i.e. accommodation land. Here they must serve the remainder of the six-day detention period (except if licensed to a slaughterhouse), after which they are sold as "free" cattle through the markets or privately. And, as with the free cattle moved from ports to dealers' grazings, these post-detention movements could not be traced.

During 1965 and 1966, about three fifths of the cattle were licensed to markets and two fifths were licensed directly to farms (Table 91 and Map 70). The proportion moved directly is surprisingly high in view of the fact that only about 10 per cent of home-bred older store cattle were sold privately (p. 357). This difference is a reflection of the fact that farmers are more willing to buy privately from dealers than they are from other farmers and since all the Irish cattle are sold by dealers, but only a small proportion of the Scottish cattle are sold by them, it would be expected that more Irish cattle would be moved by this method. To elaborate, farmers are more willing to buy privately from a dealer, Irish or Scottish, than from another farmer because a dealer, by virtue of his larger-scale operations than a farmer, is better able to match supplies to individual demands. Moreover, through his years of experience a dealer can more easily fix a price to the cattle and he can also offer credit arrangements. In other words, many of the functions of the auction market are carried out by dealers, but this is not possible for most farmer-farmer transactions and hence most such transfers are carried out through the auction market system.



There is another factor contributing to direct movement of Irish cattle, namely that the stores which are unsold at first exposure, i.e. presentation for sale at a market, are often exposed several more times before they are finally sold. And since even under the best of care, cattle lose weight and condition by being marketed and transported, it is not surprising that these remarketed stores are not too popular with farmers. A proportion of the Irish cattle presented at markets are, of course, sold at first exposure. But if 1966 is representative, the proportion not sold is high enough to make this an important factor in favour of direct buying (Table 92). Home-bred stores, too, are re-marketed over a short period of time but this is not a common occurrence because the sellers are usually farmers as opposed to dealers and, for a variety of reasons, they are under greater onus to sell at first exposure. In any case, stores re-marketed by farmers are likely to be better cared for in the interim period between sales. It should be noted here, however, that direct buying of Irish cattle has not always been as important as it is now. Indeed, in 1929/30 about three quarters were purchased at auction markets.<sup>13</sup> The decline in this method is due in part to a growth of trust and confidence in Irish dealers but it is also to changing methods of transfer onwards from ports. Until recent years, most of the Irish cattle were transferred by rail and, as the market lairages were located adjacent to the railway lines (p. 59), it was natural that a high proportion of the cattle should be disembarked there and later sold by auction. Of course, farmers could have cattle sent by rail as well but this was not popular because they were obliged to meet the train and provide transport from the off-loading platform to their farms, tasks which it was not always easy or convenient to perform. In contrast, onwards transfer



by lorry, which at first supplemented and has now replaced shipment by rail, lends itself much more readily to direct movement. Thus, if prior arrangements have been made, the dealer will have the cattle sent to the purchaser's farm wherever it may be located. A further point to note regarding transfer from ports is that an increasing number of farmers are going themselves to Merklands lairage to select their own cattle. By doing this, they overcome one drawback of the order cattle system of purchase - lack of choice. Indeed, by going to the lairage the farmer is able to have an even wider choice than at the auction markets because all the markets' supplies for that week for Scotland will be at the lairage. Such purchases are neither direct movements, at least in the sense of being order cattle, nor are they market movements but, for the sake of convenience and because as yet they are not a high proportion of the total, they have been included in the direct movement figures.

An interesting feature of the onward movement from ports is that there are considerable regional variations in the methods used. Moreover, whereas it might have been expected that the proportion sent directly from ports to farms would decrease with distance, the reverse is true. Specifically, over half the stores moved to Aberdeen and Kincardine during 1965 and 1966 were sent direct from ports to farms but only about three tenths moved to the South-East Region, and two fifths moved to the East-Central Region were handled in this way. It is difficult to account fully for these differences but a partial explanation at least is that markets in the South-East and East-Central Regions depend to a much greater degree upon the income from sales of Irish stores than do markets in the North-East Region. Indeed, it would not be an exaggeration to say that Irish stores were

the "raison d'etre" of some markets, of which Forfar is a prime example. And, arising from this, it has been markets in the South-East and East-Central Regions which have made the greatest effort to perpetuate sale by auction. Another important factor to consider is that many farmers in the East-Central and South-East Regions buy Irish cattle only once or twice a year. Hence they lack the regular contact with Irish dealers which often leads to direct shipment. In contrast, farmers in the North-East Region buy Irish cattle in smaller lots but more frequently and, over the years, many of them have established personal relationships with Irish dealers of the kind necessary to movement direct from ports.

#### Irish Cattle for Feeding

It should be noted that hitherto the discussion of Irish cattle movement has included all types, that is, no differentiation has been made as to whether they were for feeding or for breeding. This is of necessity rather than choice because information was not available regarding the proportion of each type moved direct from ports or via markets to farms. However, by the following steps it was possible to determine the purpose to which the cattle were put once they were on the farms to which they were moved.

- (1) The dates of purchase, farm locations and number of Irish cattle (bullocks and heifers separately) bought by farmers within the six-day detention period were abstracted from Divisional Veterinary records (p.474).
- (2) These lists were then taken to Area Livestock Officers who, from their intimate knowledge of the area, identified which of the heifers were for breeding and which were for feeding.
- (3) The heifers for breeding, whether for immediate use as replacements

or for bulling and resale, were mapped by the method of grid squares and representative dots (Map 54, see also p. 70). In addition, the remaining heifers and all the bullocks, i.e. the Irish stores for feeding, were mapped in the same way (Map 70).

By these methods, all the Irish cattle bought by farmers within the six-day detention period were classified and mapped. Unfortunately, however, 27,068 or 30 per cent of the cattle were not sold to farmers within the six-day detention period (Table 92). Rather, they were licensed from markets to accommodation land and then sold as "free" cattle of which no record was kept and hence ruling out the above methods (p.425). It is known, however, that they would have been disposed of in the following three ways: (a) sold to farmers at auction markets; (b) sold to farmers privately; (c) licensed to slaughterhouses. The third method accounted for about 7,000 of the 27,000 and was probably a somewhat higher proportion than in other recent years owing to the introduction of short-term legislation in Ireland during 1966.<sup>13</sup> Most of these cattle, i.e. about 5,000, were slaughtered in Aberdeenshire, where it is common for dealers to buy very forward stores which, if unsold at the store markets, are equally suitable for immediate slaughter. It is also known that stores from Northern Ireland formed the bulk of such slaughterings because, unlike stores from Eire, they receive the U.K. Fatstock Guarantee without a waiting period (p.467).

If the 7,000 cattle licensed to slaughterhouses are discounted, the 65,000 Irish cattle traced represent three quarters of the total moved to Scottish farms for breeding and feeding. The disposal of the other 24 per cent or 20,000 is not precisely known, but it is quite likely that most of them were distributed to farms in the same regions,

if not counties, where the accommodation land is located (Table 92). Moreover, it is probable that the proportions for breeding and feeding were much the same as for those traced. In other words, it was felt that the methods used to calculate the disposal of the recorded cattle could be "raised" to include an estimate of those not recorded. The results of this procedure were:

	Number for Breeding	Number for Feeding	Total
Highlands and North	355	826	1,181
Aberdeen and Kincardine	2,536	26,769	29,305
East-Central Region	3,390	29,753	33,143
South-East Region	994	14,258	15,252
South-West Region	3,279	3,698	6,977
Scotland	10,554	75,304	85,858

In summary, it can be said with little fear of error that 88 per cent of the Irish cattle distributed to farms in Scotland during 1966 were for feeding and 12 per cent were for breeding. The movement of the latter have, of course, already been discussed (pp. 352 - 353) and it now remains for the distribution of the former to be examined, beginning with an analysis of the sequence of purchases.

#### Sequence of Supplies

It has already been mentioned that there are considerable variations both throughout the year and between regions in the sequence of Irish cattle purchases (p.415). These variations are well known in general terms by those concerned with the trade but it is a difficult task to assess them accurately. One method is to use the monthly landings at Scottish ports (Table 84). but this approach suffers from three disadvantages:

- (1) all types of Irish cattle are included;

- (2) a proportion of the cattle are sent to England;
- (3) even if cattle en route to England were discounted, those remaining would be for Scotland as a whole, so that regional or county comparisons could not be made.

Another method is to use veterinary records of numbers moved to farms in each county but this, too, is limited in that:

- (1) all types of Irish cattle are included;
- (2) the returns are for quarter year periods only;
- (3) cattle licensed by dealers to accommodation land are recorded as going to the county where the accommodation land is located and, since the accommodation land is usually located near the markets, the figure for counties with large markets is artificially high, i.e. the cattle would, in fact, have been distributed not only to these counties but also to nearby ones.

However, by grouping the counties on a regional basis, limitation (3) can be minimized and, since only a small percentage of the cattle are for breeding, this method was useful as a guide to the sequence of supplies (Table 83 and Map 70). In addition, information on this basis was available for a period of years, a factor of considerable importance in the Irish cattle trade (p.406).

A third method is to eliminate the cattle sent to accommodation land or slaughterhouses and those for breeding. That is, the 27,068 "free" cattle and the 7,827 for breeding were abstracted leaving only the 57,168 for feeding. This method is useful in that it deals only with cattle for feeding but it omits the "free" cattle for feeding (p.429). The fact that it could be done for only one year, however, was a more serious limitation, especially in view of the shipping strike which lasted for most of May and June, 1966. This not only reduced the



numbers landed during those two months but also inflated the number bought during July. However, if these limitations are kept in mind, this method provides the most useful guide to the sequence of Irish cattle supplies for feeding because the specific date of purchase for each of the 57,168 cattle traced was known and, moreover, this information was available on an individual farm basis and therefore local and regional comparisons could be made.

The monthly patterns of purchase in all the main feeding areas are similar in that there are two marked concentrations, one from mid-January to mid April, the other from July to November (Tables 83 and 93). The first part of the late winter-spring concentration arises because of heavy purchases of Irish cattle during January and early February to fill courts which were previously occupied by Irish stores bought during October and November. Some of these late-winter purchases are for fattening in courts, too, but a considerable proportion are fattened off grass during the early spring. Purchases for these purposes overlap, however, to some extent with purchases for grass fattening which begin in late February and last until April or early May. The earliest bought of these are put outside on a temporary "store" diet until the grass "comes away" and the fattening process can begin. A noteworthy feature of this spring concentration is that it begins earlier for Irish than for home-bred stores. One reason for this difference is that the Irish stores, more so than home-bred ones, are in forward condition, suitable in most cases for fattening within two to three months, i.e. during the peak period for fatstock prices. A second reason for this earlier peak is that many farmers have found that, if Irish stores are purchased between early March and early April and put directly onto grass, they often "go back", i.e.



lose weight and condition, because spring grass growth in Ireland is in advance of that in Scotland. To overcome this difficulty the stores are bought in later February and early March, in which case they come off poorer grazings in Ireland and can be put in courts or outside on grass with supplementary feed with little or no deterioration. Of course, this difficulty can also be overcome by waiting until the grass in Scotland is well established, but by that time, i.e. late April and May, home-bred supplies are available in relatively greater numbers and hence fewer Irish stores are required.

Numbers during the period from late April to the end of June was extremely low during 1966 owing to the shipping strike, but even in normal years it is a relatively slack one for Irish cattle purchases (Tables 83, 84 and 93). This arises for similar reasons as that for home-bred stores, namely that pastures have been stocked earlier and additional supplies are needed only to fill the limited number of "vacancies" which arise as these cattle are fattened off. Following this lull, however, there is a marked rise during July which usually lasts until mid-August. During this period purchases are made for the grass feeding-court finishing sequence (pp.411-412). And, as previously, this period of higher purchases is followed by a lull because it falls between two types of fattening sequences. The second of these, the court feeding and court finishing sequence, begins in October and reaches a very high peak indeed during November (Table 93). Finally, the peak for court feeding during November is followed by a lull which lasts until mid-February and the sequence begins anew.

Having outlined the similarities in the sequence of Irish store cattle purchases within Scotland, it now remains to examine the differences. Of these, the only important one to note is the greater

autumn, especially November, concentration in the East-Central and South-East Regions as compared with the North-East (Aberdeen and Kincardine). This is explained in terms of different feeding practices (pp.411-416) which in turn arise out of the different types of farming in the areas to which the Irish cattle go. In the North-East Region semi-intensive arable farms with two to three years grass as well as arable by-products create a more uniform demand for Irish stores than in Strathmore, the Lothians, and the Merse of Berwick where there is a greater emphasis on arable crops and hence court feeding is relatively more important.

#### Distribution

The areal distribution of Irish cattle for feeding is the product of the many factors of demand that already have been discussed and hence little further analysis is required. However, there are several features worthy of note, one of which is the marked concentration of Irish cattle for feeding in the area from Aberdeenshire south through Strathmore, Fife and the Lothians to the Merse of Berwick (Map 70). It is, of course, to be expected that this arable area would receive a large proportion of the Irish cattle. But, the very small number distributed to the south-west lowlands and along the Moray Coast from Banff to Easter Ross is surprising because these are important feeding areas, as the distribution of suckled calves and older home-bred stores shows (Maps 61, 62, 67 and 68). The explanation of all these patterns is that Irish stores are, in effect, a reserve supply to be "called upon" only when demand exceeds home-bred supplies (p.406). Thus, it is not so much lack of cattle feeding in the south-west lowlands (Table 82) or Moray Firth area which lowers the number of Irish cattle required, but rather it is the fact that requirements in these areas are met by home-bred supplies. Conversely, in the areas to which

Irish cattle do go in large numbers, demands are far in excess of local supply. Analysis in these terms is, of course, based on the assumption that the Irish store cattle are for the same purpose as home-bred stores. This is, in fact, not so far from the truth because, much more so than formerly, Irish cattle are looked upon simply as one of the many sources for commercial beef production (p.407).

However, it should be noted that cattle feeding primarily for dung production is still important in the Lothians, Strathmore and parts of Fife, especially on potato-growing farms (Map 65). And, it is still true that many farmers in this area consider forward Irish stores the most suitable type for this purpose.

#### Movement to Grass Parks

There is one type of store cattle movement between farms in Scotland which has not been mentioned previously, namely movement to grass parks. This movement is similar to that of sheep for wintering (Chapter IV) in that both movements involve the transfer of stock seasonally between farms of different ownership, but the ownership of the stock does not change. However, the two movements differ in that the cattle are moved during the summer and the sheep are moved during the winter. It should be noted here also that some sheep are moved to grass parks during the summer and autumn<sup>14</sup> but this is not a common practice and therefore it will not be discussed separately.

The transference of cattle to summer grazings has been a feature of the geography of livestock movement in Scotland for so many years that it is difficult to ascertain when or where it was begun. The indications are, however, that it is an outgrowth of the sheiling system. Under this system, farmers and crofters moved with their cattle from the farms and crofts where they spent the winter to common

grazings in the hills during the summer. The main reason for this movement was that the hills could only support cattle in large numbers during the summer and that by moving them there for the summer the maximum amount of land in the lowlands could be devoted to the production of cereals, grass and root crops for sale, domestic use and for winter fodder. Moreover, it was during the spring and summer when cattle numbers were at their highest and this also made extra summer grazings desirable.

The shieling system was well-nigh universal in Scotland until the Agricultural Revolution which led to its decline and eventual disappearance<sup>15</sup> for two main reasons: (1) the common hill grazings gradually passed into private ownership; (2) large tracts of hill grazings, formerly used for cattle, were converted to sheep runs and subsequently also for deer forests (pp. 9-11 ). Nevertheless, farmers in the lowland areas were still faced with the problem of how to accommodate their cattle stocks during the summer at which time, as in the past, the numbers were at a maximum owing to spring calvings and at the same time the land available to maintain them at home was reduced because of the devotion of the land to arable crops, some of which e.g. grass, turnips and stubbles, could be used for cattle during the winter but not during the summer. It would appear, then, that the movement of cattle during the summer to rented grass fields or parks was developed as a solution to these problems and that it still is a common practice today for much the same reasons.

A large but unknown acreage of grass parks is let privately and therefore the following discussion, which is based solely upon the grass parks let by auction markets, is necessarily fragmentary. However, it is likely that well over half the total acreage of grass parks rented is

let by public "roup", i.e. auction. Moreover, it is unlikely that the types of movement to auction-let grass parks differ significantly from those let privately and therefore this discussion can be used as a general guide to the geography of cattle movement to grass parks in Scotland as it exists at the present time.

During 1966, the estimated total acreage of grass parks let by auction in Scotland was as follows:

Area or Region	Acreage of Grass Parks Let by Auction, 1966
Highlands, Orkney and Caithness	2,000
North-East Region (excluding Orkney and Caithness)	8,000
East-Central Region	4,500
South-East Region	7,000
South-West Region	12,000
Scotland	33,500

Information, including the type of stock moved, the location of the grass parks and the residences and types of lessees, i.e. farmers and dealers, was collected for 18,700 acres or 56 per cent of the total acreage of grass parks let by auction during 1966. From this information it is apparent that a large proportion of the grass parks, accounting for about one third of the total acreage let, are used for dairy cattle followers, i.e. young dairy stock and dry cows. The use of grass parks for this purpose is, of course, most common in the South-West Region, where it accounts for well over half the grass park acreage, but it is also common in all the other regions. Except for a small acreage used for sheep, which in any case are often grazed along with cattle, and for an even smaller acreage devoted to beef cattle for breeding, the other two thirds of the grass parks surveyed were used for older store cattle for feeding. Furthermore, of the

acreage devoted to store cattle for feeding approximately equal proportions were leased by farmers and dealers. The number of store cattle moved could not be determined accurately but it is known to be considerable because most of the grass parks are stocked at a rate of about one older store per acre. The movement itself was determined accurately using the location of the grass parks and the residences of the lessees. From this data, it was readily apparent that most of the movements involved short-distance transfers, i.e. less than 25 miles, and therefore it served no useful purpose to analyse them further. Other than these features, the only important point to note is that most of the grass parks are let by farmers, particularly estate owners and retired or semi-retired farmers, who for one reason or another have grass fields but do not keep cattle of their own.

#### SUMMARY

Most of the store cattle moved in Scotland at over one year of age are purchased for immediate or subsequent fattening rather than for resale as stores. Therefore, the patterns of movement of older store cattle is determined above all by regional similarities and differences in supply and demand for store cattle for feeding which in the widest sense includes such factors as age, breed and sex of the stores and the amount, types and seasonality of the feeding stuffs available in each region for fattening them. The North-East Region is predominant in terms of the numbers moved within it and to it from other Scottish regions, a situation which is also true for calves (pp. 395-396). Furthermore, although Irish cattle are of far greater relative importance in the East-Central and South-East Regions, in



terms of total numbers moved the North-East Region is equally important as a receiver of Irish stores. This pre-eminence of the North-East Region both for the movement of calves and older stores reflects the extensive area of land there which is devoted to producing crops suitable for storing or fattening cattle and the historical association of cattle breeding, rearing and feeding with this region.

## CONCLUSION

Many factors contribute to the patterns of movement of store sheep and store cattle in Scotland, but some are obviously more important than others. These factors can be best examined by considering the main types of movement separately.

The broad patterns of movements of store sheep and cattle for breeding are largely determined by the distribution of breeds within the integrated breeding system. Viewed more closely, however, the movements of breeding stock are complicated by the fact that the stock are not usually moved directly between farms within the integrated breeding system. Thus, they are moved at various ages from the farms on which they are born to intermediate farms before they finally reach the farms on which they are used as replacements.

The broad patterns of movement of store sheep and cattle for feeding are also strongly influenced by distribution of breeding flocks and herds, but as important, if not more so, are such factors as cropping patterns, farm types and sizes and types of buyers. On the other hand, the movement of stores for feeding is simplified, particularly for sheep, in that a much larger proportion of them than breeding stock is moved only once, viz. from breeder to fattener.

There are two other important types of inter-farm movement, namely, the movements of ewe hogs and store cattle to grass fields, the former during the winter and the latter during the summer. These movements differ from those previously discussed in two important respects.

First, the stock are moved between farms without a change in ownership of the stock. Second, the stock are all transferred privately, this notwithstanding the fact that some of the grass fields are let by auction.

The main purpose of this study was to identify and explain the main patterns of these movements of store sheep and cattle between farms in Scotland. The information presented in connection with this main purpose can, and hopefully will, be used for secondary or subsidiary purposes. The full range of possible uses will not be discussed here, not least because they depend to a large extent upon the varied interests of potential readers. There are, however, several uses known to the writer and these will be discussed briefly below under the following three headings (i) Methods of Analysis, (ii) Possible Applications, (iii) Future Prospects.

Methods of Analysis Somewhat different approaches were adopted to fulfil the two main purposes of this study. Specifically, the main lines of movement were identified from auction market sales records and these movements were then explained using information gathered by interview with auctioneers, agricultural advisers and farmers and from agricultural publications. Furthermore, it was found that publications and interviews with agricultural advisers contributed most heavily to an understanding of the broad relationships between movement and such factors as historical antecedents, farm types and sizes and types of crops grown. On the other hand, interviews and correspondence with auctioneers and farmers were particularly useful in explaining the more detailed aspects, for example the influence on movement of such factors as breed and age of stock and types of buyers.

The methods of analysis or approach taken in this study are, then, basically straightforward and with few, if any, important alterations they could be used as guidelines for further research into the geography of livestock movement. It is to be hoped that this will be so, not least because such studies would contribute much to fields of interest outwith agricultural geography itself. Some contributions of this nature arising from the present study will now be examined.

Possible Applications Recent studies by DAFS have included annual estimates of net inter-regional transfers within Scotland and exports to England of store livestock.<sup>1</sup> These estimates are based on small samples and the much more complete data presented in this study should therefore be useful, particularly if the statistics on movement are converted from a headage to a monetary basis.

Veterinary authorities have been attempting in recent years to keep a much closer check on the outbreak and spread of livestock diseases, particularly foot-and-mouth. One attempt to do this has been legislation which requires farmers to keep a record of the origin or destination of each animal moved to or from their farm premises.<sup>2</sup> These records are, however, often poorly kept, if at all, and are therefore of limited value for the purpose for which they were intended.<sup>3</sup> The movements presented here, although for only one year and of a general nature, should therefore be a useful contribution to understanding this ill-documented topic. In addition, it is suggested that a licensing or similar system could be used, if not for movements within Scotland, at least for movements between Scotland and England. Steps have already been

taken by veterinary authorities to supervise the movement of young calves from England to Scotland and this movement could be used to test the practicability of a licensing scheme. Such a scheme would not be as difficult to implement as it might first appear because twenty to thirty dealers and marketing groups control most of the calf movement and the infrastructure of such a monitoring system is already in existence in the form of Divisional Veterinary Officers. Another factor which might make this scheme more readily acceptable is the current political situation, specifically, the demand by many Scots for a greater measure of home-rule. Thus, if the livestock imported from Northern Ireland must be licensed, why not those from England?

Agricultural geographers and others interested in the delimitation of types of farming in Scotland should find this study useful in that it concerns aspects of farming enterprises which are not readily apparent from the census returns. For example, it has been shown that many farmers in the Spey valley winter ewe hoggs, but no indication of this is given by the December census returns. This omission occurs because the census return explicitly states that stock are to be "returned" only by the owner who, in the case of a farmer who has sent his ewe hoggs away for wintering, does not have the stock on his farm at the time the December census is taken.<sup>4</sup> Of course, if the movements of store livestock were taken into account when determining farm types, it would be necessary to include other types of inter-farm transfers, such as feedingstuffs. This, however, in no way invalidates the main point



which is that the present method of delimiting farm types could be greatly improved by attempting to view the farms as functional units rather than as static ones at a limited number of specific dates.

Future Prospects There are some aspects of the movement of store sheep and store cattle which could usefully be investigated in more detail than was possible in this study. The principal type of movement requiring further analysis is that which takes place between farms under one ownership, i.e. linked or led farms. A detailed investigation of this type of inter-farm movement would be a valuable contribution because such movements have been important in Scotland for many years<sup>5</sup> and particularly because an increase in this type of ownership and movement might prove to be a partial solution to the problems of hill and upland farming in Scotland. This last statement is open to question, but the fact remains that no comprehensive survey of linked farms has yet been made upon which the issue could be decided.<sup>6</sup>

Another fruitful line of investigation would be to trace the movement of individual store animals throughout their lives. Such an analysis would complement the general approach taken in this study and would be particularly useful for assessing the influence of such factors as breed, sex, age and markets on the patterns of store movement.

There is one aspect or type of store movement which, although not previously mentioned in this study, should be noted here as being one worthy of examination. This aspect is the close connection which arises between particular farms because stores are transferred between them for a long period of years. This type of movement is known to be of considerable importance in Scotland,<sup>7</sup> but was not investigated owing to the fact that time permitted only one year's movement to be surveyed in detail. It could perhaps be examined as part of a wider study which included the transfer of store-stock between linked farms.



## GLOSSARY OF SHEEP FARMING TERMS

A. Female Sheep

<u>Name</u>	<u>Age</u>	<u>Discussion</u>
Ewe lamb	Birth - 6 months	If put to the tup at 18 months of age, gimmer becomes <u>stock</u> gimmer. If not put to the tup (as in Ross and Cromarty, Sutherland and Caithness) referred to as <u>eild</u> or <u>yeld</u> gimmers till $2\frac{1}{4}$ years old, then, when clipped, referred to as <u>maiden</u> ewes till put to the tup at $2\frac{1}{2}$ years.
Ewe hoggs	6 - 12 months	
Gimmer	12 - 18 months	
Ewe (or stock ewe)	$1\frac{1}{2}$ years to drafting or casting age, usually $5\frac{1}{2}$ years	In Northern Counties $2\frac{1}{2}$ years to drafting or casting age (see note above).
Eild or yeld ewe	Any age	Ewe which has not reared a lamb that season.
Cast or draft ewe	$5\frac{1}{2}$ years or thereabouts	Ewes removed from a regular flock for breeding in a flying flock or for feeding. The term 'draft' is properly used for ewes of any age surplus to stock requirements whilst the term 'cast' is properly used for ewes which are $5\frac{1}{2}$ years or so and are unsuitable for further breeding in a regular flock. However in practice the two terms are used interchangeably.

B. Male Sheep (Castrated)

## Male Sheep for Breeding

<u>Name</u>	<u>Age</u>	<u>Name</u>	<u>Age</u>
Wether or wedder lamb	Birth - 6 months	Ram or tup lamb	Birth to 6 months
Wether hogg	6 - 12 months	Tup hogg	6 - 12 months
Shearling wether	12-18 months	Shearling tup	12 - 21 months
Two-year old wether	18-30 months	Tup	21 months - 5 years
Three-year old wether	30-42 months	Cast tup over 5 years - sold off the hill for lowground use or immediate fattening.	

## GLOSSARY OF SHEEP FARMING TERMS

- Hirsel: Land and/or sheep which a shepherd herds
- Heft: Sub division of a hirsel
- Shotts: Sheep below the average quality of the flock
- Top Lambs: The best and most forward lambs in the flock
- Flying Flocks: Flocks not graded in ages or bred 'on the ground' but reconstituted every year
- Led Farm: A farm supervised by an employee with the farmer non-resident
- Stells: Shelters for hill sheep during severe snow storms. They are usually circular with a diameter of about 15 yards and with walls 5 to 6 feet high, this construction causing wind-driven snow to be deposited only near the sides, leaving the central area clear. Stells appear to have been developed about 1800 in the Southeastern Border area and were particularly useful for sheltering home-wintered ewe hoggs [R. Trow Smith, A History of British Livestock Husbandry: 1700-1900 (London: Routledge and Kegan Paul, 1959), p.206.] They are still very common in this area but are also found in the far North of Scotland, probably having been introduced there by flockmasters from the Borders at the time of the clearances. Originally of dry stone construction, some are now made of corrugated aluminium attached to wooden stakes. Stells are not to be confused with fanks or bughts which are pens or enclosures for handling sheep, such as at marking time (i.e. the first count of the season of the lamb crop, usually taken in June)

## LIST OF ABBREVIATIONS

Abbreviation	Full Title
Agric.	Agriculture
Agric. Hist. Rev	Agricultural History Review
Blackface Sheep	Blackface Sheep: Journal of the Black- face Sheep Breeders Association
D.A.F.S.	Department of Agriculture and Fisheries for Scotland
ESCOA	East of Scotland College of Agriculture
HMSO	Her (His) Majesty's Stationery Office
JRASOE	Journal of the Royal Agricultural Society of England
NSA	New or Second Statistical Account
NOSCA	North of Scotland College of Agriculture
OSA	Old or First Statistical Account
QJA	Quarterly Journal of Agriculture
SAE	Scottish Agricultural Economics
SGM	Scottish Geographical Magazine

## LIST OF ABBREVIATIONS

Abbreviation	Full Title
SJOA	Scottish Journal of Agriculture (SA - Scottish Agriculture is the same journal, this name having been adopted in 1959)
THAS	Transactions of the Highland and Agricultural Society (TRHAS - Transactions of the Royal Highland and Agricultural Society is the same journal, the 'Royal' having been added in 1949)
WOSCA	West of Scotland College of Agriculture

## FOOTNOTES

## INTRODUCTION

<sup>1</sup> Thomas R. Weir, Ranching in the Southern Interior Plateau of British Columbia (Memoir 4, Geographical Branch, Mines and Technical Surveys. Ottawa: Queen's Printer, 1964). [This memoir is a shortened version of a doctoral thesis on the same general topic done by Weir.]

<sup>2</sup> J.T. Coppock, An Agricultural Atlas of England and Wales (London: Faber and Faber Ltd., 1964), p. 155.

J.T. Coppock, "The Geographer and the Use of Land" (University of Edinburgh Inaugural Lecture, No. 29. Delivered on Tuesday, 17th May, 1966), pp. 16-17.

J.T. Coppock, "Postwar Studies in the Geography of British Agriculture", Geographical Review, LIV (No. 3, 1964), p. 425.

J.T. Coppock, "The Geography of Agriculture", Journal of Agricultural Economics, XIX (No. 2, 1968), p. 164.

<sup>3</sup> It is convenient to treat as stores all stock other than fat, whether bought for breeding or for feeding, except cattle for dairy purposes. It should be noted, however, that for various reasons the movements of neither rams nor bulls were examined.

<sup>4</sup> For the sake of completeness movements of stock from Ireland to Scotland and between Scotland and England also will be examined.

<sup>5</sup> In his doctoral thesis entitled The Cattle Industry of the Republic of Ireland: A Study in Economic Geography, Desmond Gillmor relies heavily upon census data for identifying lines of movement. This was of necessity rather than choice, however, because when the data for that study were being collected (1962-1966), most of the cattle in the Republic of Ireland were moved privately, i.e. outwith the auction markets. In any case, the census and other published statistical data in Ireland are more suitable than their counterparts in Scotland for identifying patterns of stock movement. Gillmor also conducted numerous personal interviews with farmers, agricultural advisers and cattle dealers throughout the Republic and these, too, contributed much to the identification of the most important lines of movement there.

<sup>6</sup> At the time of writing (1970) two MA (Honours) dissertations dealing with some aspects of the geography of livestock movement in Scotland are under examination at the geography department of the University of Edinburgh.



## FOOTNOTES

## CHAPTER I

<sup>1</sup> M.L. Ryder, "The Evolution of Scottish Sheep", Blackface Sheep, XXII (1969), 21-29. [This article formed the main source for the discussion of the development of Scottish sheep breeds to 1700. The article is based on a paper by Ryder which appeared in Scottish Studies, XII (1968).]

<sup>2</sup> Ibid., p. 29.

<sup>3</sup> Ibid.

<sup>4</sup> J.A.S. Watson, "The Rise and Development of the Sheep Industry in the Highlands and North of Scotland", THAS (5th Series), XLIV (1932), p. 5. [Live weights would be about double the carcase weights.]

<sup>5</sup> Ibid., p. 6.

<sup>6</sup> Ibid.

<sup>7</sup> J. Robson, "Cheviot Sheep: South and North Country", THAS (5th Series), XLIII (1930), pp. 63-68.

<sup>8</sup> Watson, XLIV, p. 11.

<sup>9</sup> David Archibald, "On the Cheviot Breed of Sheep" THAS (4th Series), XXII (1880), pp. 110-129.

William Barber, "Breeds of Scottish Sheep - I Cheviot", THAS (5th Series), XXVI (1914), p. 122.

J.B. Orr and A.H.H. Fraser, "Restoring the Fertility of Scottish Sheep Grazings", THAS (5th Series), XLIV (1932), p. 64.

<sup>10</sup> Archibald, XXII, pp. 110-129.

A. MacNeillage, "On the Agriculture of Bute and Arran", THAS (4th Series), XXIII (1881), pp. 1-52.

<sup>11</sup> Archibald, David, "The Blackface Breed of Sheep", THAS (4th Series), XVI (1884), p. 210.

<sup>12</sup> A. MacNeillage, "The Production of Early Mutton", THAS (5th Series), XXV (1913), pp. 208-210.

Robert Greig and J.S. King, "Distribution of Livestock in Scotland: Fifty Years' Changes", SJOA, XII (1929), p. 244.



## CHAPTER I

13 Anon., "The Stock Carrying Capacity of Hill Grazings in Scotland - I", SJOA, XXI (1938), pp. 219-234.

14 Ibid.

15 Watson, XLIV, p. 12.

16 MacNeillage, "The Production .....", p. 220.

J. M'G. Wilson, "A Survey of the Breed", Blackface Sheep, No. 3 (1950), pp. 22-26.

17 MacDonald, XVI, p. 210.

18 Watson, XLIV, pp. 12-13.

19 R. MacMillan, "Breeds of Scottish Sheep: Blackface", THAS (5th Series), XXVII (1915), pp. 142-145.

20 W.B. Duthie, Hill and Upland Farming in Roxburghshire, ESCOA, Bulletin No. 40, (June, 1953).

21 W.B. Duthie, Economics of Hill Farming: Blackface or Cheviot ESCOA (1955), p. 8.

22 J. Dudgeon, "Account of the Improvements which have taken place in the Agriculture of Scotland since the formation of the Highland Society", JRASOE (1st Series), I (1840), p. 87.

23 J. Gillespie, "Report on the Agriculture of Dumfriesshire", THAS (4th Series), II (1869), p. 316.

J. Sanderson, "On the Agriculture of Berwickshire and Roxburghshire", THAS (New Series), No. 78 (1862), pp. 333-371.

24 Alexander Guild, "Half Bred Sheep", THAS (5th Series), IX (1897), pp. 221-223.

25 MacNeillage, "The Production .....", pp. 210-212.

26 Watson, XLIV, p. 8.

27 J. Dickson, "Report on the Agriculture of Perthshire", THAS (4th Series), II (1868), pp. 160-172.

28 Watson, XLIV, pp. 5-6, citing Skene Keith in the Aberdeenshire Report (1811) of the Old or First Statistical Account.

## CHAPTER I

29 Robert Greig, "The Extension of Temporary Pastures in Arable Farming", SJOA, XIV (1931), p. 3.

30 M. Mackie, "Forty Years' Farming in Aberdeenshire", SJOA, XXVI (1946-47), p. 225.

31 Watson, XLIV, pp. 13-14.

32 The number of lowground breeding sheep were calculated by subtracting the breeding sheep qualifying for the Hill and Upland Sheep Subsidies from the total number of breeding sheep, all of which were available on a parish basis. December 1967 figures were used for the year 1968 in accordance with the payment of the sheep subsidies (i.e.) subsidy payments for 1968 were based on the December 1967 figures.

33 Hill Farming Research Organisation. Third Report, 1961-1964, p. 34.

34 Robert Wallace, Farm Live Stock in Great Britain (4th Ed; Edinburgh: Oliver and Boyd, 1907), p. 672.

35 Catherine P. Snodgrass, "Stock Farming in Scotland and Its Relation to Environment", SGM, 49 (1933), p. 32.

36 P.M. Scola, "An Economic Classification of Scottish Farms", SAE (DAFS, Edinburgh: HMSO), XV (1965), p. 298.

37 Types of Farming in Scotland, (DAFS, Edinburgh: HMSO, 1952), p. 25. [Half the total rough grazings, including deer forests, represents about 40 per cent of the total agricultural land surface of Scotland.]

38 J.F. Robinson, "Breed Adaptation and Improvement in Sheep", JRASOE, CXX (1959), p. 21.

39 J.A. Symon, Scottish Farming: Past and Present (Edinburgh: Oliver and Boyd, 1959), pp. 330-331.

40 R.J. Robertson, The Breeding and Selection of North Country Cheviot Sheep, ESCOA, Bulletin No. 26: Sheep Husbandry in the Scottish Borders (Proceedings of a Conference of Farmers held in Tait Hall, Kelso, Roxburghshire on January 9, 1951), pp. 19-25.

41 J. Robson, "Cheviot Sheep: South and North Country", THAS (5th Series), XLII (1930), p. 68.

42 Ibid., p. 71.

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<sup>43</sup> Allan Fraser, "The Scottish Sheep Industry To-Day: A Critical Review", THAS (5th Series), LXVI (1954), p. 28.

<sup>44</sup> Ibid.

<sup>45</sup> Snodgrass, p. 32.

<sup>46</sup> The conventional regions and the counties in each are as follows:

Highland Region - Argyll, Inverness, Ross and Cromarty, Sutherland, Zetland.

North-East Region - Aberdeen, Banff, Caithness, Kincardine, Moray, Nairn, Orkney.

East-Central Region - Angus, Clackmannan, Fife, Kinross, Perth.

South-East Region - Berwick, Lothians (East, Mid, West), Peebles, Roxburgh, Selkirk.

South-West Region - Ayr, Bute, Dumfries, Dumbarton, Kirkcudbright, Lanark, Renfrew, Stirling, Wigtown.

K.B. Dunn, "Lamb and Hogg Production in Scotland", SAE (DAFS, Edinburgh: HMSO), XVII (1967), p. 69.

<sup>47</sup> Snodgrass, p. 32.

<sup>48</sup> James MacDonald, "On the Agriculture of the County of Caithness", THAS (4th Series), VII (1875), p. 246.

<sup>49</sup> A.R.B. Haldane, The Drove Roads of Scotland (Edinburgh: University Press, 1952), pp. 7-9.

<sup>50</sup> Ibid., pp. 143-149.

A.C. O'Dell and K. Walton, The Highlands and Islands of Scotland, ed. W.G. East (Regions of the British Isles: Edinburgh and London: Thomas Nelson and Sons, Ltd., 1962), pp. 112-114. [Figure 32, p. 113 shows the most important fair and drove roads in the eighteenth century.]

<sup>51</sup> Malachy Postlethwayt, Britain's Commercial Interest Explained and Improved (2 Vols; 1757), I, p. 57, cited in Haldane, p. 192.

<sup>52</sup> Stirling Journal, 1840-50, passim, cited by Haldane, p. 201.

## CHAPTER I

<sup>53</sup> R.T. Buchanan, Some Economic Problems of Livestock Marketing with Particular Reference to Scotland, ESCOA, Economic Report No. 45 (August, 1957), pp. 1-3.

<sup>54</sup> L.V. McEwan, The Marketing of Store Livestock in Scotland, (University of Glasgow Studies in Agricultural Marketing, Department of Social and Economic Research), p. 30.

<sup>55</sup> Stocking arrangements, whereby the auction company retains ownership of the stores and the feeding farmer is paid for fattening them, are sometimes made but account for only a small proportion of the trade. See also McEwan, p. 37.

<sup>56</sup> Based on the June Census, making allowances for about .2 million lambs fattened before the census.

<sup>57</sup> Figures supplied by the Institute of Auctioneers and Appraisers in Scotland, 3 Glenfinlas Street, Edinburgh 3.

<sup>58</sup> About 150,000 of the 250,000 represent double marketings, i.e. lambs bought and re-sold as lambs by dealers or bought as lambs and sold as hogs in the spring by farmers. The remainder, or about 100,000 are moved privately.

<sup>59</sup> "Lambs" here include those marketed for the first time as hogs (glossary, p. 445).

<sup>60</sup> Report on the Marketing of Live Stock in Scotland (DAFS, Edinburgh: HMSO, 1933).

<sup>61</sup> See footnote 54, Chapter I.

<sup>62</sup> See footnote 58, Chapter I.

<sup>63</sup> The estimated total throughput during 1966 of 2 million store sheep of all types was about 1/4 to 1/3 of a million less than in recent years. Exact comparisons could not be made, however, because the auctioneers records (see footnote 57, Chapter I) are based on the fiscal year which runs from the end of March one year to the end of March the following year.

<sup>64</sup> J.M. Dunn, "Lamb and Hogg Production in Scotland", SAE (DAFS, Edinburgh: HMSO), XVII (1967), pp. 68-74.



## CHAPTER II

<sup>1</sup> As pointed out by McEwan, p. 47, the percentage of stores for breeding handled privately is higher than stores for feeding because it is more important for the purchaser to have a knowledge of the origin of the former than the latter.

<sup>2</sup> See also McEwan, pp. 37-38.

<sup>3</sup> David Archibald, "The Blackface Breed of Sheep", THAS (4th Series), XVI (1884), pp. 228-240.

<sup>4</sup> H.G. Clarke, Commercial Sheep Management (London: Crosby, Lockwood and Son Ltd., 1963), pp. 39-40.

<sup>5</sup> Based on estimates of breeding flocks in each area obtained from numerous sources. A similar figure was obtained using another method by Dunn, p. 70.

<sup>6</sup> Allan Fraser, Sheep Farming (London: Crosby Lockwood and Son Ltd. 1945), p. 28.

<sup>7</sup> DAFS, December Census.

<sup>8</sup> Robson, "Cheviot Sheep .....", pp. 68-69.

<sup>9</sup> Barber, "Breeds of .....", pp. 125-146.

<sup>10</sup> J.P. McGowan, "Scrapie in Sheep", SJOA, V (1922), pp. 365-375.

<sup>11</sup> Report on the Marketing of Livestock in Scotland (DAFS, Edinburgh: HMSO, 1933), p. 33.

<sup>12</sup> Cheviot lambs for feeding had been moved from north to south Scotland for many years previous to this (MacDonald, THAS (4th Series), VII (1875), pp. 246-248) but it was not until the 1920's that Cheviot breeding replacements were moved south in large numbers.

<sup>13</sup> Steamboat connections between Wick and Thurso and Leith (Edinburgh) were established in 1833 (2nd Statistical Account).

<sup>14</sup> A Century of Agricultural Statistics: Great Britain, 1866-1966 (MAFF and DAFS, London: HMSO, 1968), pp. 95-97. [ Tillage (a) 1870 - 11.7 million acres in England and Wales, 2.14 million acres in Scotland, (b) 1939 - 6.83 million acres England and Wales, 1.5 million acres in Scotland; Improved grass (a) 1870 - 14.3 million acres in England and Wales, 2.3 million acres in Scotland, (b) 1939 - 17.8 million acres in England and Wales, 3.1 million acres in Scotland.]

## CHAPTER II

<sup>15</sup> R.P. Askew, "Recent Changes in Sheep Breeding in Arable Areas", Agric., XLIV (1937-38), Part I, pp. 450-457.

T.L. Bywater, "Crossbreeding of Sheep", JRASOE, CVI (1945), pp. 166-184.

H.J. Elwes, "Cross Bred Sheep", JRASOE (3rd Series), VI, Part II (1895), pp. 221-231.

<sup>16</sup> Clarke, "Commercial .....", pp. 39-41.

<sup>17</sup> A. Blyth and J.M.A. Cunningham, "Some Aspects of Sheep Intensification", SA, XLVI (No. 2, Spring 1967), p. 61.

<sup>18</sup> The acreage of turnips and swedes in Scotland has dropped from 309,000 in 1939 to 153,000 in 1968 (Source: DAFS June Census). Tillage has changed little, however, due to an expansion of cereals, in particular barley.

<sup>19</sup> Indicative of this is the increase in shepherds' weekly earnings from 215. 1d. in 1962/63 to 282s. in 1967/68 (SAE, XV (1965), p. 331 and SAE, XIX (1969), p. 231).

<sup>20</sup> Clarke, "Commercial .....", pp. 35-41.

<sup>21</sup> Oliver's in Hawick (established 1817) is the oldest auction market in the British Isles. It together with St. Boswells took over the function of fair centres, such as Melrose which held the largest lamb fairs in the south of Scotland, in much the same way as Lanark superseded Thirlestane, East Kilbridge and West Linton.

A Pictorial Review of the History of Andrew Oliver & Son Ltd. (Hawick: R. Deans and Co.).

G. Murray, "On the Improved Value of Scotch Sheep", JRASOE (2nd Series, Part II), III (1867), pp. 570-575.

<sup>22</sup> St. Boswells' supplies come mainly from the lower Tweed valley whilst Hawick's come from the upper portion. Arising from this, St. Boswells tends to attract larger breeds and types of feeding and breeding lambs, including larger and higher priced Half Bred ewe lambs, than Hawick.

<sup>23</sup> Clarke, "Commercial .....", p. 41.

<sup>24</sup> Ibid.

<sup>25</sup> Caithness Livestock Breeders Limited: Report on an Experiment, 1964-1966, (Thurso: March, 1967).

<sup>26</sup> Same as footnote 5, Chapter III



## CHAPTER III

<sup>1</sup> A proportion of the ewes qualifying for upland subsidy (Table 2) would also be maintained for part of the year on rough grazings. The figure of two thirds is to be looked upon, then, as representing only the proportion of the total breeding flock maintained all year on hill grazings.

<sup>2</sup> "Other farms" include farms in England.

<sup>3</sup> A.M. Mackenzie, "Sheep Numbers and Marketings in Scotland, 1941-1951", SAE (DAFS, Edinburgh: HMSO), VIII (1953), pp. 35-38.

<sup>4</sup> In 1926 there were 391,000 acres of turnips and swedes in Scotland but in 1966 there were only 170,000 acres (A Century of Agricultural Statistics, Table 51, p. 103).

<sup>5</sup> Mackenzie, p. 38.

<sup>6</sup> Ibid., Figure B, p. 36.

<sup>7</sup> Report on the Marketing of Live Stock in Scotland, 1933, Table 13, p. 55, and figures from the Meat and Livestock Commission, Perth were the two sources used for making this comparison.

<sup>8</sup> Dunn, SAE, XVII, Table 43, p. 70.

<sup>9</sup> MacMillan, THAS (5th Series), XXVII, pp. 146-158. [MacMillan remarked upon the differences in fleece weight between the Perth Blackface and the West Highland or Argyll Blackface which he found to be as follows: Perth - 4 to 5½ pounds, Argyll-Inverness-Ross-shire - 3 to 4 pounds.]

<sup>10</sup> W.R. Sullivan, The Isle of Lewis, 1926-1966: Four Decades of Change, p. 5.

<sup>11</sup> Information on the shipment by sea was kindly provided by David MacBrayne Ltd., 44 Robertson Street, Glasgow and The Caledonian Steam Packet Co. Ltd., Gourock.

<sup>12</sup> W.B. Duthie Organisation of Hill and Upland Farming in Selkirkshire, Edinburgh School of Agriculture, Bulletin No. 61 (August 1959), Appendix, Table F. [Unwashed fleece weights for South Country Cheviots averaged 3.9 pounds in 1958 for 26 sheep farms in Selkirkshire as compared with 5 pounds for North Country Cheviots on 22 upland stock rearing farms. Mr. Duthie (interview) gave approximate dead weights for the two types as being: South Country - 35 to 40 pounds, North Country - 40 to 50 pounds.]

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Sheep Breeding and Management (Bulletin No. 166, MAFF, London: HMSO, 1960), pp. 21-23. [Average ewe clips are given as being 4 pounds for the South Country Cheviot, 5 pounds for the Caithness (park-type) North Country Cheviot and 3.5 pounds for the Sutherland (hill-type) North Country Cheviot.]

<sup>13</sup> West Highland Survey, ed. F. Fraser Darling (Oxford University Press, 1955), pp. 237-238.

<sup>14</sup> P.G. Craigie, "The Growth and Development of the Trade in Frozen Mutton", JRASOE (2nd Series, Part I), XLIX (1889), p. 205.

<sup>15</sup> MacNeillage, "The Production .....", pp. 208-211.

<sup>16</sup> Report on the Marketing of Live Stock in Scotland (1933), pp. 102-104.

<sup>17</sup> The normal or average carcase weights for the Scottish breeds in recent years have been as follows (Source: Interview with W.B. Duthie, ESCOA):

South Country Cheviot	- 35 - 40 pounds
North Country Cheviot	- 40 - 45 pounds
Blackface	- 40 - 50 pounds
Greyface	- 45 - 50 pounds
Half Bred	- 45 - 55 pounds
Down Cross	- 45 - 60 pounds

Of course, these averages conceal wide differences such as those between the various types within each breed and also those between lambs of the same general type fed on different types of rations and/or for varying lengths of time. They are, therefore, to be treated only as a rough guide to the fattening properties of the various breeds.

<sup>18</sup> MacDonald, THAS (4th Series) VII (1875), pp. 166-257. [MacDonald mentions the sending of store sheep south to the Edinburgh sales and other southern markets, the Georgemas fair held in Caithness in July being the one particularly noted for this trade.]

<sup>19</sup> John O'Groats Journal, July 14, 1967. [In a column concerning events 50 years previously (1917) it was mentioned that "Mr. William T. Sproat, Borgue House, Kirkcudbright, had completed 50 years' attendance at the Inverness Wool Fair (i.e. began buying there in 1867). An interesting fact was that he had bought Landside, Caithness, sheep for the 50th time in succession. In the early days he superintended the 'lifting' of sheep bought in Sutherland and Caithness, and certain stock, such as the ewes, were walked the whole distance to Kirkcudbright, taking not infrequently six weeks to do so. The ewes were often in better condition on arrival than when they started." ]

<sup>20</sup> It is quite common for the Newton Stewart Blackface to be crossed with the Blue-headed or Hexham Leicester rather than with the Border Leicester. Amongst other properties, the Blue-headed Leicester imparts a more rapid maturing rate to its Greyface offspring than does the Border Leicester.

## CHAPTER IV

- <sup>1</sup> Ryder, "The Evolution of Scottish Sheep", p. 24.
- <sup>2</sup> Ibid.
- <sup>3</sup> Ibid.
- <sup>4</sup> A.K.M. Meiklejohn, "South-Eastern Scotland: Agriculture" (British Association for the Advancement of Science, 1951), p. 105.
- <sup>5</sup> D. Archibald, "On the Cheviot Breed of Sheep", pp. 110-129.
- <sup>6</sup> Rev. Wm. Brown, "Parish of Eskdalemuir" (21 Vols.; OSA; Edinburgh: William Creech, 1794), XII, pp. 610-611.
- <sup>7</sup> Symon, Scottish Farming, p. 273, footnote 4.
- <sup>8</sup> T. Hogg, "Parish of Minigaff" (15 Vols.; NSA; Edinburgh: Wm. Blackwood and Sons, 1845), IV (Dumfries - Kircudbright-Wigton), Kircudbright, p. 136.
- <sup>9</sup> C. Scott, "Wintering Hill Sheep", THAS (4th Series), XVIII (1886), pp. 124-148.
- <sup>10</sup> Symon, Scottish Farming, p. 277.
- <sup>11</sup> William MacDonald, "On the Agriculture of Inverness-shire", THAS (4th Series), IV (1872), p. 53.  
T. MacLelland, "On the Agriculture of the Stewartry of Kirkcudbright and Wigtownshire", THAS (4th Series), VII (1875), p. 48.  
James MacDonald, "On the Agriculture of the County of Sutherland", THAS (4th Series), XII (1880), pp. 1-90. [These are some of the numerous references to the away-wintering of ewe and wether hogs.]
- <sup>12</sup> Symon, Scottish Farming, p. 199.
- <sup>13</sup> R.G.C. Smith, "Wintering Blackface Ewe Hogs", SJOA, XXIX (1949-1950), pp. 94-101.
- <sup>14</sup> A.H.H. Fraser, "The Wintering of Ewe Hogs", SJOA, XX (1937), pp. 166-172.
- <sup>15</sup> Ibid., pp. 170-172.  
G.M. Davies, "The Wintering of Welsh Mountain Ewe Lambs", Agric., LVII (1950-1951), pp. 379-382.

## CHAPTER IV

16 A questionnaire was sent to all the members of the Society, of which 10 per cent or 296 were completed and returned and all of these were from farmers with flocks of over 300 ewes.

17 D.N. McVean, The Vegetation of Scotland, Chapter 17 "Regional Patterns of Vegetation", ed. J.H. Burnett (Edinburgh: Oliver and Boyd, 1964), pp. 569-577.

18 Ibid.

19 Scott, "Wintering Hill Sheep", p. 142.

20 Gimmers were left eild in the eastern Borders previous to the stocking of the north but the practice was not as common as it was to become in the north. Also, it had virtually disappeared from the south of Scotland by the time it became common in the north Scotland.

D. Archibald, "On the Cheviot Breed of Sheep", pp. 110-129. [Archibald gives a lengthy discussion of the different systems of Cheviot management which had developed by 1880.]

21 Achany Farm, Lairg, NOSCA Report, June, 1967, pp. 4-5.

22 Crofters Commission Report, 1966.

23 Inwintering ewe hoggs in Lewis and Harris, NOSCA, January, 1967. [In co-operation with crofters throughout the island the College has conducted trials in recent years on the inwintering of ewe hoggs (lambs). Plans accompanying this pamphlet give details of Norwegian hay boxes and Icelandic sheep troughs for feeding the hoggs indoors.]

24 Clarke, Commercial Sheep Management, pp. 55-56.

25 MacDonald, "On the Agriculture of the County of Sutherland", pp. 1-90.

MacLelland, "On the Agriculture of the Stewarty of Kirkcudbright and Wigtownshire", pp. 48-50.

26 Rothiemurchus forest in Speyside is one of the largest natural forest areas in Britain. It and other forests in the area are largely pine forests, an important factor as far as winter shelter is concerned.

27 MacDonald, "On the Agriculture of the County of Sutherland", pp. 1-90. [MacDonald mentions that "turnip herds" was the name given to persons who looked after the hoggs during the winter.]



## CHAPTER IV

28 Captain R.L. Mackie-Campbell, Stonefield, Tarbert, Loch Fyne, Argyll.

29 Major J.E. Benson, Chesters Estate Office, Humshaugh, Hexham.

30 Report of the Committee on Hill Sheep Farming in Scotland (DAFS, HMSO, Cmd. 6496, 1944), Appendix 2, p. 92. [This report gives the number of hill-subsidized ewes in each county for 1941/42. The 1966/67 figures were obtained from the DAFS.]

31 Types of Farming in Scotland (1952), p. 25 and Scottish Agricultural Economics, XV (1965), pp. 297-298. [In Types of Farming in Scotland, hill farms as of December 1946 and June 1947 were classified as "farms having about 95 per cent of their acreage under rough grazing and permanent grass, and whose main enterprise is the production of store sheep and wool". There were 2,025 such farms, representing 63 per cent of all full-time farms, that is, farms requiring 1,800 or more man hours per annum to operate. The SAE article was based on the June, 1962 census and hill sheep farms were defined to include "inter alia, that at least 90 per cent of the farm shall be in rough grazing and that 35 per cent. of the labour requirements shall be in sheep". On this basis, there were 1,434 hill sheep farms representing 5 per cent. of all full-time farms. The term full-time farm in this instance was defined as 'units apparently requiring at least 250 man days per annum' which at 8 or  $8\frac{3}{4}$  man hours per day obviously excludes some included in the earlier survey.]

32 J.B. McCreath, "Sheep in Sheds, Part I: Hogg Wintering", SJOA, XLIX (1964-1965), pp. 112-118.

33 Survey of Blackface Sheep: A Report to the Scottish Hill Farm Research Committee (Edinburgh: HMSO, 1953), p. 33.

34 D.N. McVean and J.D. Lockie, Ecology and Land Use in Upland Scotland (Edinburgh: Edinburgh University Press, 1969), p. 51

## CHAPTER V

<sup>1</sup> R. Trow-Smith, A History of British Livestock Husbandry: 1700-1900 (London: Routledge and Kegan Paul, 1959), p. 111.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> The Luing breed was officially recognized in 1965.

<sup>5</sup> DAFS June census statistics.

<sup>6</sup> Statistics on artificial insemination were available but were not used because only a small percentage (less than 20 per cent) of the beef cows in Scotland are artificially inseminated and, in any case, the data available apply only to collecting areas as a whole, not to individual farms, and they were, therefore, of little use for this study. Information concerning the numbers, breeds and distributions of pedigree herds was available but was not used because there are few such herds and the distribution of them by breed is not a good indication of the distribution by breed of bulls used in commercial herds.



## CHAPTER VI

<sup>1</sup> Haldane, The Drove Roads ....., p. 2. [Previously many cattle were moved between farms in Scotland but most of the movement was of a lawless nature and occurred during clan raids.]

<sup>2</sup> J.A. Symon, "The Falkirk Trysts: A Gauge to Highland Stock Output", SJOA, XXXIII (1953-54), pp. 117-122.

<sup>3</sup> Haldane, pp. 215-221.

<sup>4</sup> Report on the Marketing of Livestock in Scotland (1933), p. 67.

<sup>5</sup> Digest of Scottish Statistics (Edinburgh: HMSO) No. 32 (October, 1968), Table 16, p. 12.

<sup>6</sup> The term clean fat cattle is used for cattle, male or female, which are fattened for slaughter without having been used for breeding.

<sup>7</sup> These figures include movements to England.

<sup>8</sup> DAFS statistics.

<sup>9</sup> Digest of Scottish Statistics (Edinburgh: HMSO), No. 32 (October, 1968), Table 16, p. 12.

<sup>10</sup> F. McIntosh, "Fat Cattle Production in Scotland", SAE (DAFS, Edinburgh: HMSO), XV (1965), p. 358.

<sup>11</sup> Report on the Marketing of Livestock in Scotland (1933), p. 60.

<sup>12</sup> O.J. Beilby, "Irish Store Cattle Imports", SAE (DAFS, Edinburgh: HMSO), VI (1955), pp. 37-39.

<sup>13</sup> F. Holme, "Trade in Farm Products across the Border", SJOA, XXXVIII (1959-60), p. 36.

<sup>14</sup> Calculated as shown on p. .

<sup>15</sup> The Scottish Milk Marketing Board Dairy Farm Census 1964, p. 44.

<sup>16</sup> A survey conducted by J.D.W. McQueen, Scottish Milk Marketing Board, 95 Bothwell St., Glasgow, indicates that about 18,000 dairy heifers and 9,000 dairy cows were moved from Scotland to England during 1966.

## CHAPTER VI

<sup>17</sup> The term "Aberdeenshire" includes the counties of Aberdeen, Banff, Moray, Nairn and Kincardine. This terminology is commonly used by farmers and auctioneers in these counties and was adopted for this study because it conveniently distinguishes these five counties from the North-East Region which also includes Orkney and Caithness (see footnote 46, Chapter I). It is, of course, somewhat misleading in that four counties in addition to Aberdeenshire itself are included but its usage is usually restricted, as in this instance, to movements effected by dealers who, in fact, sell most of their cattle at markets in Aberdeenshire. Moreover, in instances where this term might be misleading the five counties are listed separately or the term Aberdeenshire - Moray Firth area is used instead.

<sup>18</sup> Report on the Marketing of Livestock in Scotland (1933), p. 49.

<sup>19</sup> West Highland Survey, ed. F. Fraser Darling 1955, pp. 239-240.

<sup>20</sup> Ibid., p. 241

<sup>21</sup> Sir J. Ross-Taylor, "Berwickshire Memories", SJOA, XXVIII (1948-49), pp. 14-18.

<sup>22</sup> Ibid.

<sup>23</sup> Harvesting with combine harvesters reduces the amount of cut straw which is an essential ingredient of dung, i.e. straw trodden-in with manure.

<sup>24</sup> E.M. Carpenter and Katherine Dent, Trade in Single Suckled Calves in Northern England (Report 151G, Department of Agricultural Economics, University of Newcastle upon Tyne), p. 27. [Undated.]

## CHAPTER VII

<sup>1</sup> A small percentage, probably no more than 5 per cent, of the cattle sold through the store markets would have been slaughtered immediately i.e. they were, in fact, fat rather than store cattle. The cattle so handled could not be identified separately, however, so they were included with the bona fide store cattle.

<sup>2</sup> F. McIntosh, SAE, XV (1965), Table 231, p. 358

<sup>3</sup> Milk Production '69: A comment on the results of the 1969 Scottish Dairy Farm Census, Table 12, p. 24. Friesian crosses increased from an estimated 2.5 per cent of total dairy cows in Scotland in 1965 to 11.6 per cent in 1969.

<sup>4</sup> L.V. McEwan, The Marketing of Store Livestock in Scotland, p. 14.

<sup>5</sup> Report of the Store Cattle Study Group (Department of Agriculture and Fisheries, Dublin: Printed by the Stationery Office), pp. 32-33 and 105.

<sup>6</sup> Feeding for Beef Production (U.S. Feed Grains Council, London: Printed by King and Jarrett Ltd., 1966), Table 18, p. 33.

<sup>7</sup> A. Wright, "Fat Cattle - Age at Slaughter, 1964-65 to 1968-69", SAE (DAFS, Edinburgh: HMSO), XX (1970), Table 19, p. 273.

<sup>8</sup> F. McIntosh, SAE, XV (1965), Table 240, p. 363.

<sup>9</sup> Ibid., Table 236, p. 361.

<sup>10</sup> Ibid., Table 234, p. 360. It should be noted that these systems of feeding apply only to older store cattle. Specifically, they exclude the Baby Beef and Barley Beef systems of feeding which accounted for 2 per cent of all types of beef cattle fed and 8.5 per cent of all types of dairy cattle fed according to the same survey.

<sup>11</sup> D. Witney and J.A. MacLennan, "Court Feeding in East and Southeast Scotland", Farm Economics, (No. 19, Spring, 1950), pp. 12-13.

<sup>12</sup> O.J. Beilby, "Trade in Irish Cattle Imports", SAE (DAFS, Edinburgh: HMSO), I (1950), pp. 46-48.

<sup>13</sup> Report on the Marketing of Livestock in Scotland (1933), Table 14, p. 66 and Table 15, p. 67.

## CHAPTER VII

<sup>14</sup> The most common types of sheep movement to rented summer grazings are: (1) Ewes with twin lambs - this is most common for hill ewes with twin lambs and is done because if the ewes are kept in the hills they often are not able to rear two readily marketable lambs. Ewes with twin lambs are usually transferred from the hills to lowland grass fields in April and remain there until the early autumn at which time the lambs are sold and the ewes are returned to the hills; (2) Ewes moved from hill or upland grazing to lowland grass parks during September and October, and then returned to the hills for tuppings. This is called "flushing" and is done to build-up the ewes' bodily reserves for harsh winter hill conditions; (3) Ewes and lambs or lambs alone are moved to grass parks from hill grazings several weeks prior to the weaning and sale of the lambs at the autumn store sales. This several-week period on better pastures imparts to the lambs the benefits usually occurring after sale i.e. benefits derived from the shift from harsher to kindlier conditions. The extent of this practice is difficult to determine because many farmers who do it sell their lambs ostensibly as hill lambs i.e. they lead the purchaser to believe that he will gain the benefits of the shift and, moreover, by having had the lambs on good pastures, they promise to be very good lambs indeed when moved to lowland pastures. These three types of movement occur in all parts of Scotland but, as mentioned in the text, they are overshadowed by the movement of cattle to grass parks. This is evident from data which was collected on the movement of livestock to grass parks in the South-East Region where, even though sheep densities are high, it is not as common to move sheep to grass parks as it is to move store cattle.

<sup>15</sup> In most parts of Scotland the shieling system had disappeared by the mid 19th century but in the north-west Highlands it persisted into the 20th century and on the island of Lewis instances of the shieling system were recorded as late as 1930. (W.R. Sullivan, The Isle of Lewis: Four Decades of Change, 1926-1966.)

## CONCLUSION

<sup>1</sup> A.M. Mackenzie, "Agricultural Output by Regions 1961/62", SAE (DAFS, Edinburgh: HMSO), XV (1965), pp. 334-345. [An earlier estimate of regional output was made by H.J. Schemilt for 1945/46 and 1951/52 and published in SAE, V, 1954.]

<sup>2</sup> McEwan, The Marketing of Store Livestock in Scotland, p. 52.

<sup>3</sup> In the early stages of this study it was thought that these records might be very useful for identifying the main patterns of stock movement. They were not used, however, both because they were often poorly kept and because many farmers were unwilling to allow access to them.

<sup>4</sup> Form A.R. 12/1967, DAFS, Agricultural Act, 1947. [Instruction 10 states "sheep being wintered away should be entered only on the owner's agricultural return form". More generally, instruction 5 states "you should therefore include all livestock which are grazing or feeding on land which is not part of your farm, e.g. common grazings or winterings".]

<sup>5</sup> There are many references to led farms in agricultural literature, the earliest reference known to the author being found in A. Murray, The Upper Ward of Lanarkshire Described and Delineated (Glasgow: T. Murray and Son, 1864), pp. 66 and 148. A reference to this book is made in an article entitled "Farming in the Upper Ward of Lanarkshire", QJA (New Series), XXV (1865-66), pp. 180-196. The author (anonymous) of this article also states on page 185 that "this practice has prevailed for the last 80 years, and these led farms, consigned to the care of shepherds, and visited only by the masters at the principal 'handlings' have been constantly kept in the hands of the larger capitalists at low rents, owing to the losses of sometimes the greater part of the stock, to which they are exposed from their elevated situations and liability to storms". (*Italics mine*) That led farms were confined not only to Lanarkshire is evident from the following (*Ibid.*): "nor are the Upper Ward farmers or flockmasters behind the great Lothian agriculturists in taking advantage of the ease with which large sheep tracts may be managed, to hold two or more farms".



## CONCLUSION

<sup>6</sup> Several surveys of and references to linked farms in Scotland have been made eg. Types of Farming in Scotland (1952), pp. 73-74; H. Whitby, "Some Developments in Scottish Farming Since the War", Journal of Agricultural Economics, XXI, No. 1 (January, 1970), p. 2. , but none of them have adequately investigated inter-farm transfers of store stock, a serious omission in view of the importance of such movements to this type of farm enterprise. At the time of writing it was known to the author that Dr. Dunn of the D.A.F.S. was conducting a study into multiple-farm businesses but it was not known exactly what aspects of these farms were being investigated.

<sup>7</sup> For example, an auctioneer at Live Stock Marts, Stirling, estimates that 10 to 20 per cent of the transactions involving store sheep and cattle in any particular year are between the same farms as in the previous year.

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